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Hearing of The
SENATE FACT FINDING COMMITTEE ON WATER
CALIFORNIA STATE LEGISLATURE

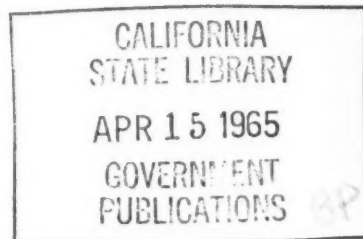
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Held In
Elks Club Building
Sonora, California

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Friday, September 14, 1962
9:30 O'clock, A.M.

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Re: Competing and Complementary Uses of Water

A P P E A R A N C E S

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Senator Stephen Teale, Chairman

Senator Carl Christensen

Senator Hugh P. Donnelly

Senator Ed. C. Johnson

Senator Waverly Jack Slattery

Lloyd Lapham, Executive Director

Kathryn Marquis, Secretary

William O'Connell, Consulting Engineer

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I N D E X

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WITNESS:	PAGE:
Kent Silverthorne, Chairman State Water Rights Board	6
Edwin F. Sullivan Assistant Regional Director U. S. Bureau of Reclamation	33
Brig. General Arthur F. Frye, Jr. Division Engineer, South Pacific Division U.S. Corps of Engineers	50
Harry Anderson Deputy Director, California Department of Fish and Game	65
Charles A. DeTurk, Director California Department of Parks and Recreation	79
William E. Warne, Director California Department of Water Resources	109

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Afternoon Session - 76

FRIDAY, SEPTEMBER 14, 1962, 9:30 O'clock A.M.

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CHAIRMAN TEALE: Ladies and Gentlemen, this is a meeting of the Senate Fact Finding Committee on Water, one of the many interim committees which the State Senate has, and we make a practice of investigating subjects which may be of legislative interest and which may need legislation throughout the State. We travel from place to place as the time and subject demand.

I would like to introduce the members of the committee. On my far left is Senator Ed. C. Johnson from Marysville, Sutter and Yuba Counties. I regret to say that I am only going to have the pleasure of having Senator Johnson serve with me on one more committee hearing which we will have in San Diego next month as he is retiring. Next is Senator Carl Christensen from Humboldt County. He is the mountain man. Next to Senator Christensen is Senator W. Jack Slattery from Mendocino and Lake Counties. We expect to have at a little later time this morning Senator Cobey from Merced with us. I am Senator Stephen Teale and represent this district here. On my right is Mrs. Kathryn Marquis, Committee Secretary. At the little table is Lloyd Lapham, the Executive Director of the Committee and next to him is Mr. O'Connell, the Consulting Engineer for the Committee.

Now, the subject of the hearing today is the competing and complementary uses of water. I would like to introduce also, coming up the middle aisle, Senator Hugh Donnelly from Turlock representing Stanislaus County. Hugh, we have a spot for you

right over here. I might say also that this will be one of the last hearings which Senator Slattery is going to attend, because he also is retiring.

The subject of this hearing today is the competing and complementary use of water. This is a subject not new to us. We have had in the past several years many occasions during the legislative process in which it has been apparent to us that there is competition for the use of water by various agencies and various uses, irrigation, power, recreation, flood control and so forth, and it has been the opinion of the Legislature, I'm sure, the day must come when we solve the problems created by the competition between the various users.

This was brought to the attention of myself and the other members of this committee this last spring during the hassle which arose when the Don Pedro Dam situation came before the Water Rights Board. There we found the competition again between recreation, fish and game, and the domestic and agricultural users. In fact, I believe we are still at a stalemate on one phase of that negotiation. Inasmuch as it involved this immediate area, it involved the neighboring districts, the Valley irrigation districts, Modesto and Turlock, and particularly the Tuolumne County Water District, I felt it would be wise to hold this hearing in this area today even though we are not going to hear from any local people.

This hearing today is for the purpose of outlining the problem to find out what the various agencies involved consider

the problem to be. This will give the local irrigation districts, the local water district and the local people who are concerned with the use of this water a better opportunity or a base from which to work in their future thinking and discussions with the people that we must obtain permission from.

I want to thank the members of the committee who have made the effort to come this far and inform them at this time that the next hearing of this Committee will be in San Diego on the 18th and 19th days of October to consider the subject matter of the Senate Resolution which concerns itself with the construction of the East and West Branches of the Metropolitan Water District conduit, the State water conduit.

Now, we will start with our first witness. We are going to call Mr. Kent Silverthorne, Chairman of the State Water Rights Board. I'll have you sit here and we will give you the microphone. I want by way of explanation to comment upon the agenda which we have before us. Ordinarily our committee hears first from the California Department of Water Resources. Today I purposely placed them last on the agenda because I felt they would be in a better position to wind up the discussion and summarize the presentations and give us a better over-all picture. Now, Mr. Warne, my apologies for keeping you tied up all day, but you are going to be last. Mr. Silverthorne.

MR. SILVERTHORNE: Chairman Teale, and Members of the Committee, this statement is in response to your letter of August 29, 1962, requesting the views of the State Water Rights

Board on a number of questions concerning competing and complementary uses of water in California.

I should like to preface the specific questions and answers with some brief general observations.

Of the numerous uses of water referred to in your letter, some are by nature competitive and some complementary. In general, those uses which are nonconsumptive in nature are complementary. The typical nonconsumptive uses are hydro-power development, fish preservation, navigation, recreation, and usually placer mining. An exception is power production operation wherein water is removed from the channel of the stream for considerable distances. In such an operation there is competition between power development and fish preservation. In other sections of a stream system a power development may cause enhancement of the fishery, depending upon the time and quantity of releases. Consumptive uses of water such as domestic, municipal and industrial, stockwatering, and irrigation remove water from the stream system and can be competitive among themselves and with the nonconsumptive uses previously mentioned. With this background, I will proceed to the specific questions.

Question 1: Do the work and activities of the Board show that there is competition for water among these various uses? If so, what demands do you consider to be the most significant in this competition? What demands have taken on greater significance in recent years? What problems have these demands created before the Board?

Answer: There has been increasing competition for water between different uses and between parties seeking to develop a supply for similar uses. Evidence of this is apparent in all major hearings held by the Board on protested applications to appropriate water and in many of the lesser hearings where the source is a perennial stream. Reference to a few of the more recent hearings before the Board will illustrate the point. The Calaveras County Water District, Oakdale and South San Joaquin Irrigation Districts, and Tuolumne County Water District No. 2 all have applications on file with the Board and are seeking permits for water in the upper watershed of the Stanislaus River for the development of projects which would supply irrigation water to their service areas. The applications overlap to a large extent, and as the parties have not reached an agreement as to a joint project, the Board now has the task of deciding between the competing applications. In this case the competition is between districts seeking water for the same purposes, namely, irrigation, together with power as a means of financing the proposed irrigation developments.

On August 28, the Board commenced a hearing on applications by the Richvale Irrigation District in Butte County seeking a permit to develop the water of the Middle Fork Feather River for irrigation and power purposes for the benefit of the Richvale Irrigation District, Biggs-West Gridley Water District, Butte Water District, and Sutter Extension Water District. The proposed irrigation development is to be financed by power

revenues. The competing uses in this instance are irrigation and power against fish and wildlife and recreation. The competition is largely between the demand for the maintenance of flow conditions considered essential for the existing fishery and the use of the water to develop power. In this case, as in many others where local districts are attempting to develop water for their use, the development of power is essential to a financially feasible project. The applicants maintain that releases of water in quantities considered sufficient by the Department of Fish and Game would render the proposed irrigation and power project financially infeasible. The Department of Fish and Game, on the other hand, maintains that lesser releases would be conducive to the propagation of rough fish with consequent destruction of the trout fishery.

Competition between power use and the maintenance of conditions conducive to fish preservation was also of primary concern in hearings before the Board involving hydro-power projects on the Klamath and McCloud Rivers. In both cases power development was the only use proposed by the applicants, and maintenance of adequate flows for fish preservation was the primary basis for objection. Agreements between the competing interests were reached in both of these cases which allowed the projects to proceed while fish requirements were satisfied.

The foregoing are typical of recent controversies between competing users of water. However, the same problems have been present to a varying extent in other hearings, such as on the Sacramento River, Mokelumne River, San Joaquin River,

Russian River, and others.

Hearings involving lesser streams have been marked by competition between domestic and irrigation uses on one side and demands for maintenance of streamflow to support anadromous and other fisheries resources of the State on the other. Many of these controversies were settled by agreement between the applicants and the State Department of Fish and Game, but in others the Board has been required to settle the matter by decision.

Insofar as competition between various uses is concerned, the most significant involves the competition for water for the maintenance of adequate streamflows for the preservation of fishlife. This competition has been increasing in importance in recent years, particularly where projects are being considered which would develop most of the remaining water of a stream system.

It follows that one of the most critical problems facing the Board is that of striking a reasonable balance between protection and enhancement of the fishery and other beneficial uses. In this connection the Board must be guided by those sections of the Water Code which declare that the use of water for domestic purposes is the highest use and that the next highest is for irrigation; also that certain applications by municipalities are entitled to legal preference. Other sections, more recently enacted, direct the Board to give consideration to general State plans for water development and to the relative

benefits to be derived from all uses of water, including domestic, irrigation, municipal, industrial, preservation of fish and wildlife, recreational, mining, and power. These statutes raise the question whether a project designed primarily to develop water for domestic use or irrigation may be prohibited from diverting water required for the preservation of the natural fish habitat where to do so would seriously affect the project's feasibility.

On occasion, the Board has been presented with the contention that little, if any, interference with natural conditions should be allowed in some areas in order that native fish and wildlife be preserved. It is suggested that the Legislature may wish to consider the merits of such proposals and to expressly set apart such areas as it deems should be maintained in their natural state.

Question 2: If it is agreed that there is increasing competition for use of the available water resources of the State, what steps are being taken or should be taken by the Board to meet these demands? In this connection, discuss a possible need for closer supervision and inspection of water use by permit and license holders. In your opinion, would this result in a greater amount of water being made available to other applicants?

Answer: From the material presented in answer to Question 1, it is apparent that there is increasing competition for use of the available water resources of the State. The Board

is extremely conscious of this fact and within the scope of its authority has earnestly sought the best means to resolve the questions raised by this competition. No general formula appears to be applicable, each case of necessity being considered in the light of the facts and conditions pertaining to it. The Board has, in issuing permits, been placing more stringent limitations on the quantities of water which have been allowed and in critical areas is preparing to require the applicant to submit a month-by-month schedule of his water needs to better determine the effect of the project on the stream. Where a project includes storage, the Board has required the parties to include in the record operation studies of the project as a basis for determining whether the proposed development will complement any competing demands for water on the stream. The Board has also required a satisfactory showing of the applicant's financial ability to proceed before it will consider the issuance of a permit for a major project in order to prevent withdrawal of substantial quantities of water from possible development by others for an extended period where the applicant will not be able to finance his project.

The Board is in the process of stepping up its supervision and inspection of water use subsequent to the issuance of permit. The same thing is being done regarding licenses. By virtue of closer supervision and inspection the Board can be more restrictive in its allowance of an extension of time to complete a project and will compel the permittee to make the

most expeditious development possible of his project. As a result it is expected that licenses confirming rights to the water allocated in permits will be issued with less delay than in the past. A review of permits issued by the Board and its predecessor agencies shows that some of the permits are not developed for the full amount of water allowed and unless inspected may remain on the records for a considerable period of time as an allocation from a stream system after actual development has ceased. Early inspection of these permits results in the cancellation of those where the permittee has not proceeded with diligence and likewise results in early issuance of a license for the amount of water actually put to beneficial use by those who have completed their development. If cancellation or a reduction in amount of water allocated under the permit results from the inspection, the unused water is available for appropriation by others.

Inspection of licenses at regular intervals serves the same purpose as early inspection of permits in that frequently the amount of water licensed is not being used, and modification of the license to reflect actual use makes any unused water available for appropriation.

In 1960, forty projects were selected at random from licenses on which no inspection or visit had been made for more than twenty years. Inspection of these projects disclosed that twenty-one of the forty visited definitely were not using water in conformity with the licenses issued by the State and

that four others lacked conformity in some respects. The conclusions reached from the sampling were that (1) twelve of the licenses should be considered for revocation because of nonuse of water, (2) three of the licenses should be modified by reducing the annual amount of water or the season of use, (3) six of the licenses should be modified to reflect changes in description of point of diversion, place of use, or character of use, (4) four of the licenses might require some action, not as yet determined, to secure conformity with the projects as now operated, and (5) fifteen of the licenses conformed to the projects as they were being operated and adequately defined the water use.

When it is considered that there are some 5,400 licenses outstanding, 1,300 of which are over twenty years old, it is readily apparent from the foregoing that the amounts of water actually in use under the licenses may be substantially less than the licenses indicate.

Upon receiving the results of the 1960 sample inspections, the Board included in its 1961-62 and 1962-63 budgets provisions for a small increase in personnel to augment its inspection program. I believe we asked for three engineers and one clerical assistant. The item was disallowed by the Department of Finance on the basis that budget restrictions would not permit the requested increase. It appears that if a stepped-up program of permit and license inspection is to be undertaken some showing of legislative approval of such a program might be required.

Question 3: Discuss the use or potential use of

exchange agreements as a means of making water available in areas not now served, particularly upstream areas.

Answer: Decisions by the Board on a number of major applications involving the Sacramento River, the Sacramento-San Joaquin Delta, the San Joaquin River, the Russian River, and other streams have made it clear that there is no unappropriated water in such streams or in such sources at times during the period July through October in normal years and, in some cases, possibly no water even during the winter months due to the storage demands. Applicants filing applications junior to the applications involved in the aforementioned decisions are faced with the prospect of having two or more of the summer months deleted from the season of use proposed in the application or having the application denied entirely because of prior allocation of the entire ordinary flow of the stream to a prior user. A suggested solution has been an exchange whereby water can be purchased by the applicant from a supplier elsewhere on the stream system and the purchased water released into the stream to compensate the downstream user for the reduction in supply occasioned by the new use. This could be accomplished in several ways. One means would be the purchase of water from some major water development agency such as the United States Bureau of Reclamation, where its canals can make water available, or the State Department of Water Resources from its proposed aqueducts or from some local water agencies. Another method would be for the junior appropriator to participate in the construction of storage

elsewhere on the stream system or to develop wells which would supply the exchange water needed. The costs in connection with any of the proposed methods of exchange would be imposed on the junior appropriator.

An example of an exchange was issuance of a permit by the Board to the Feather Water District to divert water from the Feather River which was being beneficially used, principally in the Delta area, subject to a contract for water service with the United States Bureau of Reclamation. The exchange was accomplished by a contract with the Bureau whereby the quantity of water diverted from Feather River by the District was supplied by the Bureau from the Central Valley Project to be the downstream Delta users at the expense of the District.

Question 4: Discuss methods and means of controlling wasteful uses of water.

Answer: The Board by rule refuses to approve an application where the amount of water applied for is clearly in excess of an amount reasonably necessary for the proposed use and in the event of uncertainty requires a showing by the applicant. The Board further includes a provision in all permits issued which states: "All rights and privileges under this permit including method of diversion, method of use and quantity of water diverted are subject to the continuing authority of the State Water Rights Board in accordance with law and in the interest of the public welfare to prevent waste, unreasonable use, unreasonable method of use or unreasonable method of diversion of said water." A

further means of providing control over wasteful use of water is by adjudication of the rights on a stream system through the procedures provided in the Water Code whereby the Board is authorized to make a full and complete investigation of physical facts including a determination of water requirements and recommend to the court allocation of water to the various parties restricting them to amounts they are able to put to beneficial use. After hearing and determination by the court a watermaster can be appointed upon petition of the water users to supervise the distribution of water in accordance with the decree. This procedure has been applied in numerous instances.

Some uses of water may be permissible so long as an ample supply is available but may be considered wasteful when competition with more important uses becomes apparent. An example is the use of relatively large quantities of water for flooding duck ponds. The Board has usually included a provision in permits for such purpose to the effect that the right to use water under the permit is subject to future higher uses.

Question 5: What problems does the Board have in regard to State filings? Does it have any suggestions in regard to State filings?

Answer: Meetings have been held with the California Water Commission regarding the most efficient method of handling State filings. Progress has been made in elimination of duplication of time and expense that applicants could be subject to in extended hearings before both boards.

It is anticipated that further meetings of the Commission and the Board will result in more efficient handling of the filings and possible recommended legislation if required.

That completes the statement.

CHAIRMAN TEALE: Thank you very much, Mr. Silverthorne. There are two or three things here that caught my eye. On page 5 I have a question regarding the comment here on legal preference. I know that this is a loaded question, but has the Water Rights Board established any priority of use as of the present time or do you still determine on an individual basis where the situation arises?

MR. SILVERTHORNE: As between --

CHAIRMAN TEALE: Between the various uses, domestic, agricultural, industrial, recreation, fish and wildlife and so forth.

MR. SILVERTHORNE: I don't know of any instance where the Board has established a priority that would differ from the specific legislative priority for domestic, municipal and irrigation. As between other beneficial uses which are not given a specific legislative priority, I believe the Board has under its general powers to act in the public interest perhaps established priorities in some of its decisions.

CHAIRMAN TEALE: You wouldn't care to discuss them or name them in the order of their priority?

MR. SILVERTHORNE: No, it depends on each case. I don't think we could possibly do that without going to each individual

case, which I don't have in mind now, but I don't believe that we consider anything other than the specific priorities as priorities except as it may appear in the specific case.

CHAIRMAN TEALE: I have one further question and we will go to page 6 in which you are discussing the placing of limitations on permits. You say here that you require the applicant to submit a month-by-month schedule of water needs and can require a better scheduling of the use of water and so forth. To an extent you answered my question a little further on when you discussed the review of the existing permits and licenses and findings that some were not using them properly, some were using them properly, and there was wastage, there were various other things. Do you feel that the Board has still jurisdiction on those old permits and can go back and require that they change their method or that you can change the permit on them?

MR. SILVERTHORNE: Yes, I think that we certainly have jurisdiction over the permit because the permit is only in fact a temporary right to use water until the license is issued, and the license is based upon the amount of water put to beneficial use under the permit. The problem there is that if you do not have the staff to make close inspection, there is a question of whether you can know exactly what has been put to beneficial use under the permit. We do, of course, give the top priority for inspection for permits. We have to inspect those so we will know what to finally allocate as the amount used under the license. It is the old licenses where conditions have changed which we

know nothing about because we just don't have the staff to inspect them.

CHAIRMAN TEALE: Well now, let me ask you another question, if you had an application for a permit on Stream X and there were three existing permits on that stream and in the course of the hearing and study of that application you felt that the permit could be changed so that the present three existing permits would have the water which they need but you amend and change their operation so you could also dig up this extra water for the new permittee, do you feel that the Board would exercise their right to change that permit, or do you think they would have to have more legislative direction before they could do it?

MR. SILVERTHORNE: I'm not sure that I understood the whole question. I had a little difficulty hearing. The gentleman was rattling some ice here.

CHAIRMAN TEALE: Well, take Stream X and you have present existing permits on that stream and you have a new applicant come in and he wants a permit also. If after review of the old permits you felt that by modification and changing their operation a little bit you could get the extra water that is needed to satisfy the new applicant, would the Board feel that they had the right and prerogative to go ahead and make those changes in the old permit?

MR. SILVERTHORNE: We could only do it as far as I know when they went to license, when the time came for license after they had put the water to beneficial use and were ready for license. We could at that time if we found that the water

permitted had not been all put to beneficial use, we could reduce the amount in the license. Now, whether as a matter of practice in a hearing --

CHAIRMAN TEALE: If in your investigation of the new application you found that the old applicant, the old permittee was not putting his water to beneficial use or didn't need all he had a permit for, could you at that time go ahead and change the permit?

MR. SILVERTHORNE: I doubt whether we have that authority. We might have implicit authority to do that, but I don't know of anything explicit. In a normal hearing procedure we are not -- we don't go into all the existing permits on the stream. It is largely left up to the protestants to determine whether there is enough water to go around, unless it is obvious that the stream has been permitted to the full extent.

CHAIRMAN TEALE: Well, generally aren't most of your protestants people who already have permits?

MR. SILVERTHORNE: Yes, and they usually watch out for their own rights and come in and put on a case indicating that they think there is not unappropriated water available because of the extent of their permits, but I doubt whether we would have the authority to at this stage review all these permits and take some action to cut them down. I don't think we would probably ever get a hearing finished if we had to operate that way.

CHAIRMAN TEALE: Do you see the time in the future when it may be necessary to do this?

MR. SILVERTHORNE: I see a time in the future when we are going to have to do everything that is necessary to prevent wasteful uses of water. One of the things you mentioned, in these month-to-month schedules and so forth, in places where water is becoming more scarce there is more competition for it. We are going to have to instead of just issuing permits at a rate of flow as we have previously, we are going to have to get them down to acre-foot amounts so that you have a definite amount that they are limited to rather than a rate of flow over a certain period of time, which can vary. They can use a lot more water that way than we would ever know about. We just don't know how much they are using.

CHAIRMAN TEALE: Senator Christensen.

SENATOR CHRISTENSEN: Mr. Silverthorne, you referred in your testimony to the general powers of the State Water Rights Board to act in the public interest insofar as action upon applications or permits are concerned or licenses. I take it also you are familiar with legislation that was introduced in the previous sessions of the Legislature which was opposed by your predecessor or opposed by the Department of Water Resources, opposed by the irrigation districts, which would seek to require the State Water Rights Board to place a general express limitation upon any appropriation which would interfere with the present uses of water for domestic or irrigation needs in the counties where the water originates or within the watershed where it originates. You are familiar with that legislation?

MR. SILVERTHORNE: In general -- that was before my time. I have heard about it.

SENATOR CHRISTENSEN: Insofar as I can determine from the presentation, the action of the Water Rights Board today is limited to those people who would appear before the Board and oppose a proposed permit or license. Now, does the Board in its action upon any application take any measures whatsoever such as contemplated by that legislation under the general powers to act in the public interest such as you have referred to, to protect those users of water in these counties or watersheds of origin insofar as their present uses are concerned or in regard to the ultimate uses which would be beneficial uses in that county or area? Or are you limited just to those people who come in and object?

MR. SILVERTHORNE: As far as I know, we are limited to that extent. We have no further authority.

SENATOR CHRISTENSEN: I see. Take the situation which I think we can all contemplate where under the development of water for the purposes of the Burns-Porter Act, further applications will be made either for assignment of State filings or for actual appropriations outside of the area. Is it proposed that when that situation develops that the State Water Rights Board will afford any protection whatsoever to the counties where the water originates unless there is specific objection by particular individuals or the local water district or county acting in behalf of its own citizens?

MR. SILVERTHORNE: Well, I understand that under the State assignments that protection is afforded, and wherever it is afforded the State Water Rights Board would have to recognize it and it would.

SENATOR CHRISTENSEN: Well, recognizing it, what protection is made or given by the Board to those local users or ultimate local users in those areas?

MR. SILVERTHORNE: I don't know that we give any such protection or have authority to give such protection. I would like to ask Mr. Craig --if you want to go into this a little further, I would like to ask Mr. Craig, our Chief Counsel, who has been at this a lot longer, if he knows the answer to that if you wish.

SENATOR CHRISTENSEN: Just one further question. As far as you know, then, any applicant can come in and contest the rights of a local user presently using water but without any express permit or license and in doing so the applicant might well be the State Department of Water Resources, and the individual citizen of this area, I mean, would be forced to litigate at his own expense his right to continue to use that water against the State with its resources?

MR. SILVERTHORNE: Not if he already has a right to use it. You are talking about those who are preserving it for future use in the area of origin?

SENATOR CHRISTENSEN: That is right. Right today, I mean there are people -- I believe it is well known.

MR. SILVERTHORNE: If they are using water --

SENATOR CHRISTENSEN: Who are using water without a permit, without a license -- unless those people come in at their own expense and object and prove their right to a priority, those people will be cut off.

MR. SILVERTHORNE: Well, you are speaking of either riparians or those who had pre-1914 appropriative rights, I presume.

SENATOR CHRISTENSEN: The rights I am speaking of, sir, are rights that probably have never been resolved into any definite action by the State Water Rights Board at any time, but by long continued use there are innumerable farmers and other people using this water for domestic use also. As a practical matter, I mean they would be in the position of having to come in and litigate their right to continue to use that water, if I understand you correctly, if an application for diversion or appropriation is made by the State Department of Water Resources or an irrigation district, is that correct?

MR. SILVERTHORNE: That generally would be true because we wouldn't even know about them unless they came in, know about their rights.

SENATOR CHRISTENSEN: Well, does your staff ever investigate in regards to any such application whether they exist or they should be given notice or any assistance?

MR. SILVERTHORNE: We, of course, do give under our procedures wide notice of hearings and applications on streams, but it might be possible that someone wouldn't see it or wouldn't

know about it and we also give notice where we know of applicants on the streams. Sometimes we give specific notice to the particular applicant. And in many streams we have a pretty fair idea of what water use is being made.

SENATOR CHRISTENSEN: Even if they do know about it, does the Board lend them any assistance whatsoever to aid them in their presentation of the defense of their rights?

MR. SILVERTHORNE: We do a lot of that kind of work. We help them fill out their protests. We send people out to help them and in the hearings we give everyone an opportunity to be heard and help them in every way we can when they do show up in the hearings. Of course, in this whole picture, when the Board issues a permit it is subject to all vested rights so their rights are protected insofar as the new water right we have issued if their rights are prior to that -- if they have a right, they come ahead of any permit we give, but they might have to go to court to establish it. That is the problem.

SENATOR CHRISTENSEN: That's what I'm talking about. It may be subject to vested rights if they are proven in any proceedings before the Board or judicial review before a court?

MR. SILVERTHORNE: Correct.

SENATOR CHRISTENSEN: But is there any action taken by the Board to see that those vested rights are protected without actual participation and the legal expense by the actual owners, such as people who are watering stock from a stream?

MR. SILVERTHORNE: Only to the extent that I have stated,

that we try to be certain that everyone who might be interested or have any interest gets notice, and we help them with the protests and help them in other ways, any way we can, to see that their rights are protected. We have no specific program or procedure.

SENATOR CHRISTENSEN: Many of the people are laboring under the impression that the State Water Rights Board, one of its purposes in the general power to act in the public interest is to protect those rights without any action upon their part. Well, I understand that unless they do something about it, the State Water Rights Board does not so act to protect them.

MR. SILVERTHORNE: We couldn't unless we had about 50 more people and they went out and made a thorough investigation of every stream that we had a hearing on. Then we could do it, but we couldn't possibly do it with the staff we have.

SENATOR CHRISTENSEN: In any event, you couldn't do it without actual intervention on their part to protect their right.

MR. SILVERTHORNE: Yes.

SENATOR CHRISTENSEN: One final question, Mr. Silverthorne. Do you believe that legislation such as was passed by the Senate is advisable or necessary in order to bring about increased power on behalf of the Board to do that irrespective of whether you have additional staff or not?

MR. SILVERTHORNE: I don't know too much about that legislation, as I say. I just heard of it. I doubt whether there are any cases where persons have been injured. There may

be a few where someone had to go and establish his rights in court, but they usually have to do that anyway if you get that kind of situation on a stream. I think we cover the ground pretty well insofar as getting notices out and letting people know what is happening. If they just don't want to come in or don't want to bother and in that respect, too, we let them come in in person. We don't insist they have an attorney or engineer. They come in in person. They can be heard and our engineers go out and help investigate and help them out so that they are enabled to put on their case in our hearing so that we know what the situation is.

SENATOR CHRISTENSEN: You realize this is an adversary proceeding before the Board. It is adversary in the sense that one of the adversary parties is the State Department of Water Resources supported by the taxpayers of this State and the other party in this litigation is a little farmer who wants to protect his right to continue to take water, and is there any way you know of that the Board can act under present powers to equalize those parties in their representation of their respective rights before the Board?

MR. SILVERTHORNE: No more than I have stated.

SENATOR CHRISTENSEN: Do you think legislation is desirable which would give the Board that power?

MR. SILVERTHORNE: I don't know. I think that that requires some more study. I don't know -- in general maybe something like that would be desirable. I have no idea how far

it might go or what it might require.

CHAIRMAN TEALE: I might say that the legislation desirable in the eyes of some of the Senators is the bill we didn't get out of the Senate.

SENATOR CHRISTENSEN: We did it informally in the Senate.

CHAIRMAN TEALE: There is no law on public interest that I know of existing now along the lines Senator Christensen is discussing here. Any further questions? I want to remind you of the tight schedule.

SENATOR CHRISTENSEN: Just one more. What would be the position of the Board in regard to such legislation today, would it oppose that legislation or would it support it?

MR. SILVERTHORNE: I couldn't answer that now. I think that would take some study and I would want to know a lot more about it and what the implications of it were. I just don't know enough about it.

SENATOR CHRISTENSEN: Thank you, sir.

MR. SILVERTHORNE: But that is something we could very well go into and follow up with you if you are interested in it and would like to have us do it.

SENATOR SLATTERY: Mr. Chairman, I have just one question to ask Mr. Silverthorne. On page 1 at the bottom of the page you go into consumptive use of water and you detail various types and I would like to know if you differentiate in consumptive use of water between that which is used as an actual depletion and that which is not uses, does not deplete the total supply but goes by

percolation into the underground aquifer? Do you make any differentiation between those two types of uses?

MR. SILVERTHORNE: I think if it is put into the underground aquifers for pumping out later --

SENATOR SLATTERY: No, that is part of the normal process with irrigation. A great deal of irrigation water is consumptive use, but it is not depleting the water supply of that area.

MR. SILVERTHORNE: Well, if part of it gets back into the stream through drainage you can take that much off the consumptive use. If it goes into another watershed or is pumped and put on other land and doesn't get back into the stream, I think you would have to call it all consumptive use. It would depend on how much is available for others to use after it has been put on the land, whether they pump it out of the ground or whether it goes back into the stream through drainage percolation.

SENATOR SLATTERY: There is a difference between the usage of water in the area of origin where it will percolate back into the underground aquifer and where it is transported 500 miles away. Then there is certainly -- that is both consumptive and depletion use for that particular area, is it not?

MR. SILVERTHORNE: Yes, I would assume there would be more consumption if it were taken bodily away than if it were put on the ground up in that area, because of course you are going to get some of it back. It would depend on the transpiration of the plants, evaporation and so forth. It is a matter of degree.

SENATOR SLATTERY: You do take these things into

consideration in these water rights?

MR. SILVERTHORNE: Well, yes, those things enter into some of our considerations. We have in the Richvale case we just mentioned here on the Middle Fork of the Feather which we are still in the process of hearing there, most of the irrigation is rice land and there is a very heavy drainage of water back into the stream, and some of it is picked up and reused, so we have to take that into consideration to determine the quantities of water needed by these people for irrigation as to how much they can reuse and how much gets back into the stream and how much is lost and how much they are really using. So that all enters into these considerations, yes.

SENATOR SLATTERY: When the water is taken out through canal from my district and taken several hundred miles away, there is no chance of any of that ever percolating back into the underground stream in my area, is there?

MR. SILVERTHORNE: Not if that canal is lined.

CHAIRMAN TEALE: Senator Johnson, any questions?

SENATOR JOHNSON: No.

CHAIRMAN TEALE: Senator Donnelly?

SENATOR DONNELLY: No questions.

CHAIRMAN TEALE: Mr. Lunardi?

ASSEMBLYMAN LUNARDI: No questions.

CHAIRMAN TEALE: I would like to introduce Paul Lunardi, Assemblyman from this district. I have one further question. Has the Water Rights Board adopted any attitude or any rule on release

of water for salinity control?

MR. SILVERTHORNE: I don't know.

CHAIRMAN TEALE: Have they set a priority on that?

MR. SILVERTHORNE: I don't think you would call it a priority. Of course, we were right up against that question in the Sacramento River decision and recognized the uses of water for that purpose, but I don't think -- we wouldn't give it any more priority than any of the others that don't have a specific legislative priority. It would depend again on the circumstances in each particular case, I would assume.

CHAIRMAN TEALE: I think we have to admit that salinity control is not the problem of one river. In other words, it is not a problem created by the Sacramento alone or by the Stanislaus alone or any other. Is this question being brought up in relation to the various applications in the watershed of the San Joaquin-Sacramento Delta regardless of which river?

MR. SILVERTHORNE: The water for salinity repulsion?

CHAIRMAN TEALE: Yes, because they all contributed originally.

MR. SILVERTHORNE: Yes, it is being brought up with regard to salinity repulsion. It has been brought up more with respect to water quality control for some of the districts just outside the Delta where they are having water quality problems and have quite a question of enough admixture of water of good quality to improve the quality of some of the water they get, some of that drainage and return flows that get down there.

CHAIRMAN TEALE: I have another portion of this question I am going to ask someone else a little later on today. Thank you very much and we appreciate your presentation.

MR. SILVERTHORNE: You are welcome.

CHAIRMAN TEALE: The next witness is Edwin F. Sullivan, Assistant Regional Director of the United States Bureau of Reclamation. Mr. Sullivan.

MR. SULLIVAN: Senator Teale and other Members of the Committee, Mr. Dugan, our Regional Director, would normally have been here but he is out of town for two weeks now, so I'm going to try to pinch-hit for him as well as I can.

It is a pleasure to have the opportunity to appear, as you have requested, at this hearing. I am happy to contribute whatever the experience of the Bureau of Reclamation can supply toward a more complete appraisal of the important problems which are the subject of the hearings of this committee. I also appreciate the opportunity to profit from the expression of the views of the other witnesses whom your committee has invited to appear.

First of all, let me say that I believe there can be no question about the fact that competition among the various uses of water is rapidly increasing in California. Indeed, with our increasing population and growing economy, it cannot be otherwise. In dry climates like ours, water has been and is the basic resource on which the economy of the State has depended throughout all history. As the economy expands and as the citizens of the

State increase their standards of living, they find new uses and increase old uses of water. For example, recreational use of reservoirs has grown at a rate which few would have ventured to predict a few years ago. In the last 10 years, visitor-day use at Shasta Reservoir has increased about fivefold; from 350,000 in 1952 to 1,700,000 in 1961. Similarly at Folsom Lake, a 400,000 visitor-day use in 1955 increased to about 2,000,000 visitor-days in 1961.

Another measure of the increasing interest in multiple uses of water is provided by three recent enactments of Congress dealing with general Federal policy on this subject. These include the Fish and Wildlife Coordination Act Amendments of 1958 (72 Stat. 563, 568), the Water Supply Act of 1958 (72 Stat. 319, 320), and the Amended Water Pollution Control Act of 1961 (75 Stat. 204, 210). These pertain to fish and wildlife participation in water resource development, development of municipal and industrial water supplies, and inclusion of storage for water pollution control in Federal projects.

Before I discuss examples of competing and conflicting uses of water, may I suggest a device to enable us to consider the problems in homely and familiar terms. Consider, if you will, the people of the State as a family, rather a large family to be sure; and one whose members often hold strongly individual views on various subjects. Our developed water resources can be considered to be the family income. In any family with which I am personally familiar, the desirable ways of spending the income

are always greater than the income itself. Thus, the problem of water use becomes one of deciding how to spend the income and establishing policies for that purpose. Obviously when you have a large family, the members will not always entirely agree on the ways in which the family income should be spent. And we find that all the members are able to produce compelling, and sometimes self-serving arguments, for the spending of their choice. This, of course, is conflict, but it is also one of the facts of life.

What principles then can the family adopt in deciding how and where to spend its income -- to utilize its water resources?

As I said earlier, we have a large family and one whose members hold strongly individual views. Perhaps it will assist to indicate what policies the Federal Government is developing.

Policies for the formulation, evaluation, and development of water and related land resource plans were recommended by the Secretaries of the Army, Interior, Agriculture, Health Education and Welfare; and approved by the President for the use of Federal departments in May of 1962. They are contained in Senate Document No. 97, 87th Congress, 2nd Session. In summary, Senate Document 97 states that "the basic objective is to provide the best use, or combination of uses...to meet all foreseeable short- and long-term needs. Reasoned choices shall be made between them when they conflict.... Well-being of all the people shall be the overriding determinant in considering the best use

of water and related land resources. Hardship and basic needs of particular groups within the general public shall be of concern, but care shall be taken to avoid resource use and development for the benefit of a few or the disadvantage of many....

"All plans shall be formulated with due regard to all pertinent benefits and costs, both tangible and intangible. Benefits and costs shall be expressed in comparable quantitative economic terms to the extent possible.... Reports and plans shall also indicate the extent to which departures from the scale of development are proposed in order to take into account intangibles or other considerations warranting a modification in scale not reflected in the tangible benefits and project economic costs...."

Policies, standards, and procedures relating to cost allocation, reimbursement, and cost sharing are to be the subject of further consideration. At present under the terms of Reclamation Law and policy the irrigation investment is reimbursable without interest, and when necessary is assisted by revenue from other functions. Power and municipal water investments are repaid in full with interest. The navigation, recreation, and fish and wildlife and water quality control investment is generally nonreimbursable.

The extent to which serious conflict and competition between the varying uses of water from a particular project may occur is governed by a variety of circumstances. Thus, application

of these general rules will necessarily require careful and objective analysis to minimize potential conflicts in the planning stage. Where conflicts are still present, the reports to the executive and legislative branches must contain full explanations of the methods used in arriving at an evaluation. In my opinion, the particular circumstances which create conflict and competition can only be determined after investigation of the specific projects and specific project features involved. Let me cite some examples to illustrate this point.

In our climate, flood control by reservoir storage, which requires empty reservoir space, is compatible to a high degree with water conservation, which requires full reservoir space. This is true because the flood control space can normally be designed to fill after the flood season is passed, and before peak water demands occur in the late summer. In other localities where heavy rainstorms may occur at any time during the summer, reconciliation of the two uses becomes more difficult. Even in this locality we must exercise a high degree of forecasting skill and cooperation to achieve the desired benefits for both purposes economically.

In the Central Valley, we normally think of hydroelectric power and irrigation as complementary purposes on our river systems. Water passes through powerplants in the Sierras enroute to consumptive use for irrigation and domestic purposes in the valley below. However, in the Klamath Basin, the irrigated areas lie above the major hydro-power sites, and water consumed for

irrigation reduces the amount available for power generation.

Navigation, river recreation, and water for the fishery, are usually compatible.

Although public health officials still express concern over some recreational uses of domestic water supply reservoirs, limited recreational uses have been permitted under proper safeguards. Recreational use of reservoirs does not ordinarily compete with consumptive uses of water, but it does compete for reservoir space. The ideal lake for recreation has a constant water surface, while flood control and water conservation requires a lake to rise and fall as it fills and empties. This conflict has generated some notable controversies in California, notably at Lake Tahoe and Clear Lake.

An example of the way in which these uses can be reconciled is provided by the Central Valley Project, whose initial features have now been in operation nearly 20 years. Included in its functions are irrigation, municipal water supply, river regulation, flood control, power, navigation, salinity control, recreation, and fish and wildlife conservation. Its day-to-day operation requires the coordination of these functions -- sometimes a delicate and perplexing job, but one in which we hope we are giving reasonable satisfaction to the millions of Californians directly or indirectly benefited.

Shasta Reservoir is a notable example of a single feature with extensive complementary uses of water. During the month of August 1962, the average release of 10,500 second-feet was used

in its entirety for power production. The water then flowed downstream and was partly used for irrigation. However, about two-thirds of the flow remained in the channel at the point of minimum flow and served the purposes of navigation, fishery improvement, river recreation, dilution of pollutants, and then remained available to meet other downstream consumptive needs. The releases from Shasta were joined by the releases from Folsom at Sacramento and the combined supply was used for irrigation and municipal and industrial use in the Delta Area, and part of the water was pumped into the San Joaquin Valley. In addition to this, there was sufficient outflow to Suisun Bay to keep salt water from intruding into the Delta Area. Thus, during this single month, Shasta releases served each and every purpose for which the Central Valley Project was built.

Other single features may not provide such a diversity of complementary uses. But, when you consider the many projects that already have been provided, and those proposed for the future, the outlook is not discouraging.

When the Trinity River Division of the Central Valley Project goes into operation next year, the total reservoir capacity of the Central Valley and Solano Reclamation Projects will be 10 million acre-feet. In addition, the Bureau of Reclamation has constructed some 700,000 acre-feet of storage in Santa Barbara and Ventura Counties, and, of course, operates the 31 million acre-foot reservoir behind Hoover Dam on the Colorado River.

Construction is just starting on San Luis Reservoir and Congress is now considering authorization of Auburn Reservoir. Other features in the advanced planning stage (including those of the Corps of Engineers which could be coordinated with the Central Valley Project) include storage on Cosumnes River, the Stanislaus, and other San Joaquin Valley streams. In the aggregate, within the next decade, say by 1970, additional storage amounting to 5 to 10 million acre-feet may be in operation in the Central Valley, in addition to Oroville Reservoir. Beyond that we are entering into a realm of speculation. Possibly in the next decade after that another two to five million acre-feet of storage could be economically developed in the Central Valley. It is becoming increasingly evident that water conservation will be needed on California's Northwest Coast, first to meet local needs and then to transfer the unusable and damaging surplus to the less well-watered portions of California. If these northwest streams are energetically developed by the year 2000, some 10 to 20 million acre-feet of additional storage might become available.

Fortunately in California we have not reached the stage where there is a physical shortage of water, nor is this in prospect during the next several decades. Existing and prospective projects can meet our foreseeable needs. To return to my earlier analogy, we still have the opportunity to increase the family income of developed water supplies by building more projects as they are needed. The competition comes in deciding what use to make of each increment of income as it is developed.

The principal guide for legislation and policy is that water is for people. Indeed, the principal force in the development of policy and legislation is the support of the people. Plans of themselves, be they basin-wide, inter-basin, or State-wide, are only expressions of a means or an intent. Their development requires many skills, initiative and imagination, but the greatest burden on all of us involved in water resources development is making any plan of development a reality, actually producing services for man. To this end, the responsibilities bear upon us all. With competence and courage in leadership, the water users and the people will not hesitate to rally to the support of the kind of a water resources program necessary to meet California's needs.

CHAIRMAN TEALE: Thank you very much, Mr. Sullivan. I have two or three things I want to ask you. To return to the problem of salinity control you have mentioned a couple of times. In your mention of the Shasta and Folsom Projects you included salinity control as one of the purposes of the project and I presume the salinity control is in order that you may get water out of the Delta and pump it south?

MR. SULLIVAN: Yes. Perhaps in terms of a purpose it is not a stated purpose in the legislation, and I used the term "salinity control", I think, to describe a measurement.

CHAIRMAN TEALE: It is a necessary purpose?

MR. SULLIVAN: It is an accomplishment in terms of providing adequate quality of water in the Delta so the rest of the

Central Valley Project can function, and incidentally it does at the same time protect the Delta area itself.

CHAIRMAN TEALE: Now, in this quality control, and incidentally salinity control, is that considered a nonreimbursable function?

MR. SULLIVAN: In the present Central Valley Project the water that is required for this purpose is actually for project operation and in that sense is reimbursable because the project is reimbursable except for certain very specifically stated functions that are not, and salinity control is not one of those that is stated to be nonreimbursable.

CHAIRMAN TEALE: Then, as it presently operates, it would be reimbursable with interest for that portion which was used for domestic, municipal, and would be reimbursable without interest for the irrigation?

MR. SULLIVAN: Yes, I would say so. We don't try to identify it as an item. It really comes into the over-all costs and would come out as those other costs, either reimbursable with interest or without interest.

CHAIRMAN TEALE: Now then, as an operating agency are you watching the developments both by local interests and by State interests on other streams as to their effect upon the pollution problem in the Delta? If so, what are you doing about it? Are you watching the developments on the Stanislaus, the Merced, the Yuba, the Bear and those developments?

MR. SULLIVAN: Well, yes, we of course have an interest

in what is going on in those areas to the extent that it may affect the operation of our project, and we try to keep ourselves well advised as to the developments that are occurring.

CHAIRMAN TEALE: As an operating agency do you consider that the streamflows of these relatively undeveloped rivers have their effect on pollution control in the Delta and as such do you think that they should contribute their share of that control in the future?

MR. SULLIVAN: Well, the runoff from these rivers is certainly one of the sources of supply that comes into the Delta to meet the various needs that are in the Delta. Now, the outflow for salinity is just one of those. Of course, there is use in the Delta and other uses in that vicinity, but I think that each stream has its role to play. The Sacramento River is obviously the most important one in terms of quantity. Really, we in some of our investigations are looking toward possible improvements in the flow of some of these streams along the stream and then the effect that they would have in the Delta. Let me give you an example. Cosumnes River is one that we are making an investigation on now, a possible project, and we are giving consideration in that investigation to releases in the stream channel which would maintain a continuous flow in the channel where now it becomes dry during the summertime, which would be beneficial for fishery purposes and recreation and possible pollution along the river and would contribute to the water supply into the Delta and help meet the problems there.

CHAIRMAN TEALE: You mentioned also that you were discussing the operation of Shasta and these various functions, power generation and irrigation and pollution control were complementary. Now, when you make the release of power generation, say in the early months of the summer when there is little demand for downstream irrigation, do you think that the competition for that water would be lessened if you had an afterbay sort of operation where you could release your power water when you needed to and then hold it and release it as needed for pollution control and irrigation?

MR. SULLIVAN: Well, in partial answer to that, it is a very rare --

CHAIRMAN TEALE: Let me ask you this, have you made any studies, and if so, have you found it to be economical or uneconomical?

MR. SULLIVAN: In relation to afterbay, we already have an afterbay below Shasta in which we re-regulate daily and weekly fluctuations. Now, we do not have anything to carry the water over from several months, and an additional reservoir would help out in that regard to give greater flexibility in the production of power. However, I do wish to make the point that it is a very rare occasion, in fact I can't think of any in the last two or three years that I have been following it closely, where we have made releases specifically and solely for power purposes. In practically all cases, the water is being released for some other purpose and is being used incidentally for power. We have down-

stream mandatory requirements in terms of minimum releases for fishlife below the dam, releases for navigation in the river channel, releases for irrigation along the river, and then releases for use in the Delta, and we as a general rule take whatever produces the minimum of these necessary to meet demands and that will normally meet our power demands.

CHAIRMAN TEALE: Of course, what I'm looking to is the day that perhaps something like this would relieve the pressure on the areas where you have an abundance of water and at the same time have a shortage of water because of the geographical makeup of the terrain, such as areas like this. I hardly have enough water to mix with my whisky at home and yet I have too much water most of the year, simply geographically impossible, and we have to store, so we look to further storage if we ever develop. I'm looking toward a more economical use or conservation of the water we now have.

MR. SULLIVAN: Well, I think this essentially agrees with one of the points I made in here. To eliminate competition you build more projects until of course you come to the time where you are actually physically short of water. Now, I don't think except in rare cases we have come to that stage in California yet. Our competition has come, how do you use the first increment you make. However, we do have enough increments to take care of us for another several decades if we are willing to build the projects to meet the needs.

CHAIRMAN TEALE: You feel, then, with cooperation between

the competing agencies and proper construction and proper operation that you can eliminate the competition and get more cooperation?

MR. SULLIVAN: Yes.

CHAIRMAN TEALE: Mr. Lunardi, do you have any questions?

ASSEMBLYMAN LUNARDI: Mr. Sullivan, in considering the authorization of the Auburn Dam Reservoir which is now before Congress, what is the total capacity per acre-foot?

MR. SULLIVAN: The total capacity of the reservoir?

ASSEMBLYMAN LUNARDI: In the authorization, yes.

MR. SULLIVAN: Well, the feasibility report that was prepared and which has officially gone to the Congress involves a storage capacity of one million acre-feet.

ASSEMBLYMAN LUNARDI: 900,000 to 1 million acre-feet according to their studies in their report was what they said was the only economical way to handle the total capacity of that reservoir. Now, in view of the circumstances what I wanted to know, is this total amount of acreage being considered in the appropriations bill?

MR. SULLIVAN: Well, let me correct one thing. I don't believe the report said 1 million acre-feet was the only economic capacity that could be considered. I think it was recommended on the basis of information there. Then you asked about consideration in the appropriations bill. It is not at that stage yet. It is just under consideration for authorization at the present time.

ASSEMBLYMAN LUNARDI: But a million acre-feet is being considered in the consideration?

MR. SULLIVAN: I believe that that is what the committees are considering.

ASSEMBLYMAN LUNARDI: The reason I ask this -- let me get to the crux of the problem here. We, as you know, have a Placer County Water Agency development which is in the stage of development now and there has been a difference of opinion between the Bureau of Reclamation and the local agency in the development of water resources within that county. There has been a proposal from Washington where they were considering increasing this from 1 million to 2.4 million. Do you know of any studies that have been made to substantiate this increase?

MR. SULLIVAN: We are in the process now of reviewing that matter. As you stated, there was some discussion, and I guess "conflicts" would be the right term, between the Placer County and the Bureau of Reclamation regarding the proper development there. However, I think it would also be proper to say that agreement between the two agencies has been reached initially on the basis of a 1 million acre-foot reservoir and a supplemental agreement was reached on the basis of the possible construction of a larger reservoir, so I would say here that by trying to work it out we have come to a solution to the problem with the Placer County Water Agency.

CHAIRMAN TEALE: Senator Donnelly.

SENATOR DONNELLY: No.

CHAIRMAN TEALE: Senator Johnson.

SENATOR JOHNSON: No questions.

CHAIRMAN TEALE: Senator Slattery.

SENATOR SLATTERY: No questions.

CHAIRMAN TEALE: I have one further question. I'm going to try to move this along, but on page 4 you quoted the Senate Document 97. Down toward the foot of the page here there are two terms "tangible" and "intangible". What do those things mean? We hear them all the time and I never quite know what they are talking about.

MR. SULLIVAN: Well, I suppose what we ought to do is read it directly for you. I would say "tangible" in general terminology would be benefits you can actually measure in dollars and cents or see the physical results from it, and the "intangible" would be the secondary benefits flowing out of that. For example, in irrigation, the tangible or direct benefits are normally the increase in the net income from the development of the irrigation. When you develop your irrigation area, though, it will stimulate the economy of the area and we see this in many cases in communities that have developed more rapidly, and these secondary benefits would be the intangible or secondary benefits.

CHAIRMAN TEALE: I have one further question. You may not wish to answer or you may not be able to answer, but as you know, there is discussion in areas other than Placer County as to the desirability of having the Federal Government build a project as against the desirability of having a local agency build it. We can't forecast at the moment who is going to be successful in each one of these attempts to build, whether it be

the local agency or the federal agency. If the federal agencies are successful, is it or is it not the policy to develop satellite projects for your areas of origin, your upstream areas, that cannot be served by the major reservoir? Are you planning these things or are you not?

MR. SULLIVAN: Of course, we operate under the policies and legislation directed by Congress, and the purpose of our projects is to serve people that want the service that is available. When you say "satellite project," you probably have to consider that in relation to specific projects, and I think that what has actually happened would be the best indication of what can happen in the future. The Sly Park is a good example of one that would be called a satellite project in relation to Folsom, and I see no reason why similar projects could not be developed in connection with other major reservoirs if it is the desire to have those come along, and it would be our policy to cooperate with people in that regard.

CHAIRMAN TEALE: Is it the policy of the Bureau in their studies and planning to look at these things at the onset or do you wait for specific congressional authorization before you look into the possibility of a satellite?

MR. SULLIVAN: In order to make an investigation we do not have to have specific congressional authorization. We have general authorization which would enable us to make the investigation. We in making all of our studies in the Central Valley, we have tried as best we can to make reasonable allowance for

what we think upstream development will be in terms of potential projects, and then where there has been an apparent interest or justification we have entered into investigations of specific projects and we have a good many of those underway right at the present time, additional projects in the American River basin, and in the Cosumnes River basin, for example, and one in this area, too, that is in progress.

CHAIRMAN TEALE: Thank you very much. Any further questions? Thank you very much, Mr. Sullivan. Our next witness is Brig. General Authur F. Frye, Jr., Division Engineer, South Pacific Division, U.S. Corps of Engineers. General Frye.

GENERAL FRYE: Mr. Chairman and Members of the Committee. I appreciate this opportunity to meet with you and discuss some of the important aspects in making optimum use of our greatest natural resource, water. The general statement of the subject matter of this hearing is very comprehensive and I can state at the outset that we do not have all of the answers that you are seeking; however, I can assure you that the Corps of Engineers is in the process of developing this information.

As you may know, the Corps of Engineers has been making studies on water resource problems in California for over one hundred years. These studies have varied from simple navigation and flood control projects to comprehensive investigations of multiple-purpose development involving water conservation, power, flood control, and related uses. In all of our studies, a close cooperation has been maintained with local,

State, and other Federal agencies in order that the interests of all concerned may be considered and the most satisfactory project recommended. As a result of these many studies, a vast wealth of information has been collected on water resources development. With reference to the subject of the hearing, the areas of water planning and study that need further review at this time are those of integrating this information, which has been collected, and supplementing it to develop comprehensive river basin plans for the long-range water resource development of the State.

The term "River Basin Planning" recently has come into wide usage insofar as water resource development is concerned. For purposes of clarification, may I outline briefly the basic steps in developing a river basin plan. The first requirement is an inventory of all existing water and related land resources. This has been done in many areas in California and need not be repeated. This inventory must include data on available water supply, electric power, transportation, recreation, and quality of the water. Records must be compiled for forest products and mineral sources. Next, all works constructed or authorized by local, State, and Federal agencies must be inventoried to determine those needs which have been satisfied. Subsequently, account must be taken of the basins' present and future economic development with specific reference to population, industries, occupations, and land use. With this background, vision and imagination must be combined with sound engineering planning to assure wise

and optimum development of the available resources. I would like to emphasize that river basin planning is not an individual effort by one agency. It must be participated in by all interested agencies--local, State, and Federal. In order to complete the basin plans as indicated above, it will be necessary that the expert services of all agencies be coordinated and funds to prosecute these studies be provided.

The State of California is fortunate in that studies of resource development were initiated many years ago by State agencies. Bulletins 26 and 29, prepared by the State Division of Water Resources, have been invaluable in guiding Federal agencies in the development of individual water resource development projects. More recently, Bulletin 3 has presented a State Water Plan to include future needs. These studies demonstrated the value of long-range planning and serve as excellent beginnings to the detailed studies that must be made as water supply requirements become more competitive. In implementing a basin planning program for California, four primary areas have been delineated by the Corps which have common problems related to water resource development and economic activity. Generally, these areas are (a) Northern California Streams, (b) Sacramento-San Joaquin River Basin, (c) South Coastal Area, and (d) the Lahonton Basin. These broad areas, of course, are broken down still further into sub-basins which have even closer economic and water resource development ties. Briefly, the status of basin planning in these four areas to date is as follows:

a. Northern California Streams. This area encompasses all of California north of the San Francisco Bay and portions of the Sacramento River Basin that have surplus water. Completed reports on flood control and multiple-purpose development are being reviewed for basic data and information that may be used in the comprehensive plan. In view of some of the critical flood control and water conservation needs in the Russian River and Eel River Basins, sub-basin plans are being prepared for these two river systems and should be available next year. In addition, those studies of specified areas that have localized flood problems are being continued; however, any recommendations will be integrated into the over-all basin development.

b. Sacramento-San Joaquin River Basin. A major sub-basin in this area is that of the San Francisco Bay. A comprehensive report on the bay and its tributaries is nearing completion. The interim report on feasibility of barriers is expected to be released some time late this year. Studies of flood control and recreation in the Delta, and additional navigation requirements between the Golden Gate and Stockton are under way. Several localized multiple purpose investigations are also being conducted. The over-all basin planning in this area is still in a framework status; however, any improvement recommended for localized projects will be analyzed from the standpoint of the needs of the entire basin.

c. South Coastal Area. This area extends along the coast from San Mateo County to the Mexican border. The primary

sub-basin, which is delineated by its common economic background, is that complex of numerous small watersheds south of the Tehachapi Mountains, including the Los Angeles and San Diego areas. Since 1936, over \$800,000,000 has been spent by Federal and local interests in Los Angeles County alone for construction of reservoirs, debris basins, and channel improvements and more than \$1 billion additional is expected to be expended before the job is done. In order to integrate the future needs of this area, a base economic study is required as the first step in a plan for this basin. Such a base economic study for the San Francisco Bay Comprehensive Report has proved invaluable in projecting the growth and water needs in the area surrounding the bay. A similar study in southern California would chart a sound and planned approach toward delineation of areas that should be reserved for recreation, flood control, and various land uses.

d. Lahontan Basin. The Lahontan Basin includes all of the remaining part of California outside of the three basins already described. It is centered east of the Sierra-Nevada Mountains and the Mojave Desert. Although development in this predominately desert area has been slow to date, growth of similar areas demonstrates that the potential of this basin from the industrial, residential, and irrigation possibilities must be considered in water control and use plans for California. A number of reports have been prepared by the Corps on localized areas, primarily from the standpoint of flood control, which will be integrated into a plan for the entire basin.

A brief description of the future of navigation and flood control in California may be in order to provide information on the forecast of reservoir storage requirements for these water uses. Commercial navigation at the present time is largely limited to coastal harbors and tidewater areas throughout the State. The Corps of Engineers has been constructing navigation improvements in California since about 1860 and continues to maintain a network of more than 40 harbors and channels. It is anticipated that in the future, this system will expand considerably as a need for low-cost water movements of goods becomes more important in an economy growing in population and becoming increasingly oriented to products whose costs are largely determined by transportation charges. Additional water required for new developments in most tidewater areas will come from the ocean and will have little, if any, effect on the fresh water resources of the State. In considering future projects, shallow-draft navigation above tidewater will be incorporated as applicable in basin planning. However, since this probably would be a slack water type of navigation involving a series of locks and low dams, the actual increase in use of water would be relatively small and primarily confined to losses from evaporation and transpiration. Consequently, insofar as navigation is concerned, it is anticipated that additional storage space for this water use to the end of the century would probably be negligible. Also, any fresh water that may be used for navigation remains available for other purposes and would have very little effect

on the over-all available water in the State.

On the other hand, the flood control requirements will continue to increase as the population and economy expand. The extent to which flood control will be provided by storage in multiple-purpose reservoirs is one of the answers that will be determined by comprehensive planning. With a large number of reservoirs that have flood control storage available in them, such as in the Sacramento-San Joaquin system, a possibility exists of pooling this storage for various types and magnitudes of storms resulting in the reduction of total required flood control storage from that which would be necessary if each tributary were considered separately.

In the populated areas in and around Los Angeles and San Francisco, the flood control requirements for small watersheds have become more acute as the impervious area in the watershed has been increased by urban development. The flood peaks have increased in magnitude as the time of concentration of the water that falls in the area has decreased. Changes in the flood control requirements are not only confined to small watersheds, but as we look into the future and visualize the development paralleling our projected population increase, it is anticipated that the entire Central Valley and tributary streams will have to be reanalyzed from the standpoint of possible floods. It is recognized that certain agricultural areas in the Central Valley are now protected against floods of a magnitude that may occur on an average of every 50 years. A change in land use to a more

concentrated and higher value crop, which has occurred in many locations throughout the valley, may warrant an increase in degree of protection by modification of the levee system, construction of new upstream flood storage or a combination thereof. Conversely, in certain areas, since it may not be economical to provide levees at this time, flood plain regulation may be the answer for the interim.

Considerable flood damage has been prevented in areas where communities have planned their future development with full recognition of the flood potential in mind. Recognizing the value of such flood information for planning purposes, Congress has authorized the Corps of Engineers, at the request of the community concerned, to develop the flood magnitudes and frequencies of streams within the limits of the community for purposes of planning developments, economically sound and less susceptible to damage, within flood plains.

One of the major problems confronting the State at this time relative to water resource development, indicated in the subject of the hearing, is competition or priorities of water use. Thinking in this field has changed in recent years and priorities established several decades back have been superseded. As an example, water for navigation not long ago had a high priority of use, generally throughout the United States. Today, of course, the highest priorities in California appear to be for municipal, industrial, and irrigation use in that order. However, other uses such as recreation, fish and wildlife, and water quality control

have become of increasing importance in recent years. We can be assured, as the population increases and development proceeds, that today's priorities will change again in significance.

It is emphasized also that priorities of use for different purposes may vary not only in time but from basin to basin. As an example in California, the North Coastal area, which is the source of over 40 percent of the water in the State, has been plagued with too much water causing flood control to be a primary need in that area. However, recreation, together with fish and wildlife conservation and low flow regulation, are now becoming more important in many localities in this area than flood control. On the other hand, in the Sacramento-San Joaquin River areas, the primary use of water is municipal and irrigation--entirely different from that in the North Coastal area--and, in the future, it appears that these differences will be accentuated, as recreation in the one area and agricultural and industrial development in the other become more concentrated.

The question has been raised by the Committee as to whether or not the Corps of Engineers is finding some uses for water increasing more rapidly than contemplated in earlier planning. The public use of Corps of Engineers reservoirs for recreation has increased at a spectacular rate in California. At 13 Corps-operated reservoirs in California, the recreation attendance last year is estimated at over 4 million persons. The Corps of Engineers recognizes recreation as a tangible and important project feature and is providing basic facilities

including public access necessary for the preservation and use of this resource. We can foresee that the problem of maintaining the water level in a reservoir for recreation purposes will become increasingly acute as recreation use multiplies and lakeside facilities are fully developed.

The Corps is looking not only to water areas in reservoirs for recreation in future water resource planning, but recreation features can be incorporated into channel and levee projects by acquiring lands and providing setback levees to provide the required flood control. Within these areas, facilities can be laid out for parks, camping areas, and such development that would not be damaged seriously by flood flows. By this means, recreation strip areas can be set aside now to meet the needs of increased millions who will constitute our future population.

One of the major forms of recreation development is that of fish and wildlife preservation and enhancement in the multiple-purpose developments as well as channel works and navigation improvements constructed by the Corps of Engineers. It is recognized that aquatic recreation also is dependent upon a good quality of water. This is becoming an increasingly serious problem in many parts of the United States and California is no exception. Recently, in the 1960 Flood Control Act, the Congress authorized the Corps of Engineers to provide storage in reservoirs to improve water quality control.

With reference to allocation of costs among users of water from storage projects, the Corps has generally followed the

procedure of deducting the separable cost for each multiple-purpose from the total cost of the project and dividing the remaining costs in proportion to the benefits that each project feature will contribute. In general, costs allocated to flood control, commercial navigation, water quality control, fish and wildlife purposes, and low flow regulation are nonreimbursable items unless the benefits derived may be entirely local or a windfall to a few individuals. A large segment of recreation costs is underwritten by the Federal Government. The Water Supply Act of 1958 provides Federal assistance to encourage full development of our water conservation by providing, interest free, a 10-year development period for the agency who will use the water and then a 50-year repayment period at the very low Federal rate of interest. The Reclamation Act also provides certain Federal assistance in development water for irrigation.

In closing, I would like to emphasize that the Corps of Engineers is prosecuting the job of water resource planning in cooperation with local, State, and other Federal agencies, to develop the most effective and optimum use of water resources. We, in the Corps, are proceeding under the concept that projects regardless of who may build them should contribute to the maximum preservation, conservation, and use of waters of each river system, and further that water development should be planned in a manner that will support the State and national economic growth rate. We are mindful that every river basin plan, no matter how comprehensive or how far reaching it is at the time

it is completed, must be reviewed and altered from time to time to accommodate the constant change of an expanding economy such as ours. We are equally mindful that today's construction commits resources on a long-term basis in the service of a dynamic society.

CHAIRMAN TEALE: Thank you very much. I wish to say that the Committee does appreciate the very fine comprehensive report and the time and effort you have put in to prepare it. Senator Slattery.

SENATOR SLATTERY: This just isn't down to specifics, but I would like to know what you refer to when you are talking about this planning, basin planning. What have you actually done as the Corps of Engineers on the planning basis? I know something of what the California Department of Water Resources has done. I'm not familiar with what you have done.

GENERAL FRYE: Well, as I have stated here in the paper, we have a great deal of detail on various elements of the river basin. We are now in the process of putting this together to come out with a comprehensive plan. I think the San Francisco Bay study is a good model of what we hope to do and there we have an economic study. Now, we hope to get some economic study started in southern California shortly. Now, we are working in the north coastal region to tie together all of the various information we have on the various rivers to come up with a comprehensive plan there. We are also working in the northern Sacramento River area.

SENATOR SLATTERY: Would you hazard a guess as to the time schedule on the completion of these studies?

GENERAL FRYE: It will be probably two years before the first one comes out.

SENATOR SLATTERY: I'm particularly interested, General, in the north coast study. What is the status of that one?

GENERAL FRYE: We are doing that in two phases, one being the Eel River and the Russian River which we expect to have basin plans developed some time next year, and the remaining one will be the remaining part of the north coast, which will probably be three years.

CHAIRMAN TEALE: Any further questions? Mr. Lunardi.

ASSEMBLYMAN LUNARDI: No.

CHAIRMAN TEALE: Senator Donnelly.

SENATOR DONNELLY: No.

CHAIRMAN TEALE: Senator Christensen.

SENATOR CHRISTENSEN: No questions.

CHAIRMAN TEALE: Senator Johnson.

SENATOR JOHNSON: No.

CHAIRMAN TEALE: General, I was interested in page 10, the last line. I note that you had grouped into nonreimbursable items water quality control and particularly that the Bureau had not. Is this a conflict between the Bureau and the Corps or is this a long-standing policy of the Corps of Engineers to classify water quality control as nonreimbursable?

GENERAL FRYE: Well, this is largely growing out of the 1960 Flood Control Act and our water quality control is a general benefit downstream. It isn't a benefit to any particular area. Now, there is one exception. If you could define specifically that any water quality control that we were providing was a specific benefit to a specific area, then it might have to be considered as reimbursable, but generally we are talking about water quality control on the stream below a reservoir, and as such it is a general benefit.

CHAIRMAN TEALE: You were talking about all pollution, not only the saline?

GENERAL FRYE: Yes, this is a low flow regulation type of thing.

CHAIRMAN TEALE: Now, one other thing caught my ear. I think in your last page here you said something to the effect that basin plans should be reviewed from time to time so that they are effective as our development progresses and our population increases. In that review to bring these up to date do you anticipate that there will be any effect upon the water allocations from one group to another or the purposes to which the water will be put?

GENERAL FRYE: Well, I think this might be one of the reasons for a review, a different requirement for water allocations. However, the lead in this would have to be taken by the State and local interests to come to us with what they feel the water allocation should be and we would work with them in making a review to

see that their requirements could be met.

CHAIRMAN TEALE: In your personal opinion, I imagine you have been watching this for a long time, the change in population trends and the change in economic trends, do you anticipate in your own mind that there will be a necessity for a change in priority of use in the future? I know this is a loaded question. If you don't wish to answer it, you don't need to.

GENERAL FRYE: This is a very broad question. I don't think I could speak with any authority or any knowledge. There are many people in the room here who are better qualified to speak on this than I, but certainly the way the country is changing, the way things are changing, it may be impossible to predict the things that will come in the near future.

CHAIRMAN TEALE: One further question in regard to your basin planning, are you giving any consideration at this time to the areas of low population on the higher levels of the river?

GENERAL FRYE: Our basin plans when they are completed will consider all the satellite sites and we will come up with a development which will indicate primary and secondary sites and that perhaps will indicate that these may be constructed by local interests. However, at the time of authorization each specific project will have to be authorized separately and handled separately in cooperation with the local people in the State.

CHAIRMAN TEALE: Any further questions by the committee? Thank you very much, General Frye. Again I wish to express our

appreciation for your participation. I'm going to call now on Harry Anderson. I understand your presentation is not too long and we have run over a little to take care of you. Mr. Harry Anderson, Deputy Director, California Department of Fish and Game. He is the guy that got us into this in the first place.

MR. ANDERSON: I feel guilty before I start. Mr. Chairman and Members of the Committee, I am Harry Anderson, Deputy Director of the Department of Fish and Game. I am here representing Mr. Shannon, the Director, who is unable to be present.

Your committee's interest in this field of competing and complementary uses of water is indeed timely as it applies to fish and wildlife water needs, and I am pleased to present some thoughts and suggestions for the benefit of your review.

Today the limited fish and wildlife habitat of California is a matter of vital concern to the mushrooming armies of hunters, fishermen, recreationists, conservationists, and outdoorsmen who, as a result of social and economic changes, now form a major segment of the public.

The number of fishermen and hunters has increased at an even faster rate than the expanding population of this State. The mileage of good salmon spawning streams has dwindled from an original 3,000 miles to the present 600. The wetlands or marshes of the State have been reclaimed at an alarming rate in California as they have throughout the nation. Highway construction, industrial development, water development, land use

practices, urban sprawl and countless other activities of man contribute to the ever-shrinking fish and wildlife habitat.

Water and Land - The Keys. Land and water are the key elements of fish and wildlife habitat. Without land and water in suitable quantity and quality there is no fish and wildlife. This is such a simple fact it is difficult to understand why we so often search in other directions for the answer to fish and wildlife abundance or scarcity.

At this hearing, we are concerned with the water needs of fish and wildlife. Water forms the medium in which the assemblage of aquatic organisms lives, feeds, and reproduces. Food and game fishes are a part of, and are supported by, this assemblage which, if abundant, represents a healthy aquatic environment. Similarly, water is essential to all forms of wildlife and is frequently the limiting factor in wildlife population density -- especially in the case of waterfowl.

Until recent years, water development proceeded largely in a single-purpose direction without much consideration of these fish and wildlife uses. In many streams ample flow remained below dams and diversions to maintain suitable fish populations. In others the populations were greatly reduced or lost entirely, and in still others the fish populations were improved through increased flows or changed temperatures. Generally, the losses to fish and wildlife, if recognized, were written off as the price of "progress". Gains and improvements were incidental by comparison and usually occurred accidentally rather than by design.

The effects of water development and other water uses on fish and wildlife become increasingly apparent, and in recent years there has been a rising public desire to save the water needed for maintenance of the remaining fish and wildlife resources. Unfortunately, our knowledge of the exact needs of these resources lagged behind the development of water for other uses. The attention devoted to this problem was small in comparison to the attention being given to the other uses of water. Nevertheless, legislation was enacted on both the State and Federal levels calling upon the State Fish and Game agency to make its recommendations for protection of fish and wildlife and calling upon the regulatory agencies to consider these recommendations and to give protection to the water needs of fish and wildlife.

Establishing the Quantity of Water for Fish and Wildlife. Currently, we are establishing the quantities of water for fish and wildlife on a project-by-project basis. As each water development project comes up for authorization or licensing, we review it as carefully as time and personnel will permit. Through this process, combined with field surveys, we determine to the best of our ability the effects of the proposed project on the State's fish and wildlife resources. We make every effort to work with the project's planning and design engineers as early in the planning stages as possible to minimize the adverse effects of the project on fish and wildlife. We have made considerable constructive progress through this approach particularly with Federal and State water development programs.

As projects are considered, we recommend the inclusion of terms or conditions--such as flow releases below dams and diversions--in the permit for the project. Through this process the water for fish and wildlife is being established on a piecemeal basis. This process was born of necessity in the absence of means to accomplish a more comprehensive approach. It has and will continue to serve a valuable purpose--without it the State would have lost many valuable fish and wildlife resources through inaction.

PRESENT APPROACH. The project-by-project review approach and the present system of establishing and protecting water supplies for fish and wildlife falls short of satisfactory accomplishment in several respects:

1. It lacks the solid foundation of a long-range program with specific inter-related objectives.
2. It is not adequately influenced by basinwide and statewide considerations of current and future importance.
3. It is too frequently out of timing with the water developer, necessitating "crash programs" resulting in hastily compiled fish and wildlife protective measures which are not always in the best interest of the resources involved.
4. Although California water law recognizes water for fish and wildlife as a beneficial use along with domestic, irrigation, municipal, industrial and other recognized uses, it does not give the same protection afforded other uses. In issuing a water permit for a water project, the Water Rights Board may

condition that permit on the release of certain flows of water past the point of diversion for maintenance of the stream's fish population. This, in effect, is withholding certain quantities of water from appropriation or diversion in the State's interest. There is nothing, however, to prevent someone else from applying for this water at some downstream point, and the Water Rights Board can issue permits for appropriation of all of it at any time. This creates a problem for the Department of Fish and Game of constantly maintaining surveillance over all water applications on streams that have already had flow releases for fish and wildlife established through past determinations. It will in time, we fear, result in a gradual process of whittling down the supplies of water for fish and wildlife. Once established, there should be as much protection of fish and wildlife water supplies against encroachment as there are for other uses of water.

5. The current program is not backed up by sufficient research to give answers to the many technical and complex problems involved in the water needs of fish and wildlife.

6. There is inadequate information on the sizes, locations and inter-relationships of fish and wildlife populations. The project review process is hampered by insufficient inventories of the resources.

7. For the reasons previously described, we frequently cannot supply the water developer with reasonably accurate advance information on the water needs of fish and wildlife resources. This makes it difficult to achieve maximum multiple-purpose planning.

Water for Fish and Wildlife is Critical. The shrinking supplies of water available for fish and wildlife caused by the ever-increasing demand for water for other purposes poses a critical situation for the future of many species. The most critical water shortages are for salmon, steelhead, trout, waterfowl and for species dependent upon springs, seeps, and small streams in the more arid portions of the State.

The salmon streams of the Central Valley have been reduced in flow to the point that we can say with little reservation that further depletion of flows during the salmon spawning and migration periods will be harmful.

We also know that further water development projects will be constructed which will affect the flows. We are confident that some of these developments will be complementary in relation to the various uses. The proposed New Melones Project of the Corps of Engineers, the Yuba County Water Agency Project on the Yuba River, the Oroville Project on the Feather River and the Upper Sacramento River tributary development would all be complementary in relation to water supplies for salmon and other uses. On the other hand, other projects may well be designed in a manner which will compete directly for the water needed for maintenance of salmon.

The answer to accomplishing maximum complementary uses of water and minimizing competition is through careful multiple-use planning and development of water supplies. Single-purpose development inevitably results in competition. Multiple-use

development sometimes takes a little longer and may be a little more expensive initially, but it will build a stronger economy for the future. Without true multiple-purpose water development, there is and will be serious competition between the various water uses including fish and wildlife. Under single-purpose developments, fish and wildlife resource values will be destroyed in some instances, whereas other uses will have to suffer in some instances in the interest of maintaining fish and wildlife populations. The State should take whatever steps are necessary to minimize single-purpose development of its water resources.

A THREE-POINT PROGRAM FOR FACILITATING MULTIPLE-USE DEVELOPMENT OF WATER IN RELATION TO FISH AND WILDLIFE RESOURCES. To solve some of the problems faced by the fish and wildlife resources and by the water developer in attempting to maximize the multiple-use development of water, and to place the review of water projects in a logical relationship to a known plan and objectives, I propose the following points for consideration and implementation by the Legislature:

1. STATEWIDE FISH AND WILDLIFE RESOURCE DEVELOPMENT PLAN. There is a vital need to carefully assess the fish and wildlife resources of the State in relation to present and future needs of the resource and of the people of the State.

The plan should be developed through three simple and logical stages similar to the approach taken in the development of the State Water Plan. First, there should be a thorough inventory and assessment of the resource to form a solid founda-

tion for subsequent stages. Secondly, the current and future uses and needs of the resource should be assessed and evaluated. The third stage would be the development of a basic plan for the long-range management, development and utilization of the State's fish and wildlife resources in relation to land, water, and the people.

This would be an undertaking of major proportions and would require considerable time to complete, but the benefits to the future of the State would more than justify the cost and effort. In the absence of a long-range plan, I fear there will be continued losses to fish and wildlife as well as losses to other values in the constant day-to-day struggle to resolve case-by-case conflicts.

This plan is needed to aid not only in solving the water need problems of fish and wildlife, but also to solve problems involving land use and to bring fish and wildlife resources into compatible relationship with other resource uses and development.

2. A CONCURRENT RESEARCH PROGRAM TO ESTABLISH THE WATER NEEDS OF FISH AND WILDLIFE. The gathering of basic technical knowledge of the precise water needs of fish and wildlife species must proceed if we are to do an adequate job of reducing the quantities of water needed for fish and wildlife while at the same time maintaining the resource. We need to know the answer to many fundamental questions before we can maximize the use of the limited supplies of water for enhancement of fish

and wildlife populations.

3. PROVIDE PROTECTION FOR STREAM FLOWS AND OTHER WATER SUPPLIES ESTABLISHED FOR MAINTENANCE OR IMPROVEMENT OF FISH AND WILDLIFE RESOURCES. Statutory procedures should be created for establishing flows and uses of water in specific quantities in natural water courses for fish and wildlife purposes and for reasonable protection of such quantities from subsequent appropriation and diversion to other uses.

Unless this is done, a truly multiple-use project could be constructed including the development of improved streamflows for fish and wildlife, only to have its accomplishment in this regard nullified by subsequent downstream appropriation and diversion of the water.

I am hopeful that this three-point program suggestion will receive favorable consideration and will ultimately be appropriately initiated. In the meantime, the project-by-project review process must continue to insure consideration of fish and wildlife water needs. I am already encouraged by the idea that this process may later develop on the more solid foundation of a long-range plan for fish and wildlife development in California.

In closing, I emphasize that fish and wildlife needs for water are real and vital. They represent a major factor in relation to the competitive and complementary uses of water. If this is not recognized, the State will be in the incongruous position of saying it wants fish and wildlife but will not provide for its water needs.

CHAIRMAN TEALE: Thank you very much, Mr. Anderson. Referring to page 5 of your presentation, the last paragraph, I think we are all pretty well aware of how a single-purpose project is detrimental to fish and wildlife. In here you have listed a number of projects like New Melones, Feather River, Oroville, Yuba County, in which you state that the projects are complementary to the fish and wildlife purposes. Can you explain that just a little further, discuss these generally?

MR. ANDERSON: The New Melones, the Yuba County Water Development and the Oroville, you provide for storage but there will be releases provided that will increase the flows on a more regular basis below as well as providing facilities above. For example, on the Feather River Project there will be a hatchery which will offset the loss in the spawning beds above the dam.

CHAIRMAN TEALE: So it is the availability of water primarily for regular release that makes it complementary rather than detrimental. Is this true of the other projects that you mentioned here?

MR. ANDERSON: I'm not familiar in detail, of course, on it. We speak here of the Sacramento River tributary development, which would be in lieu of the Iron Canyon. By providing upstream storage on the tributaries we would still be able to protect the salmon run, we feel, in the main stem of the Sacramento.

CHAIRMAN TEALE: You are thinking of Stony Creek?

MR. ANDERSON: Yes.

CHAIRMAN TEALE: Any other questions? Mr. Lunardi?

ASSEMBLYMAN LUNARDI: No.

CHAIRMAN TEALE: Didn't Mrs. Davis have anything for you to ask Mr. Shannon or Mr. Anderson?

ASSEMBLYMAN LUNARDI: We don't have that close correspondence.

CHAIRMAN TEALE: Senator Christensen.

SENATOR CHRISTENSEN: I have no questions.

CHAIRMAN TEALE: Senator Slattery.

SENATOR SLATTERY: No questions.

CHAIRMAN TEALE: Thank you very much, Harry, and the committee will be recessed now until 1:30 p.m. sharp.

(Thereupon the noon recess was taken.)

FRIDAY, SEPTEMBER 14, 1962, 2:00 O'CLOCK, P.M.

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CHAIRMAN TEALE: We will call the meeting to order again. I would like to recall Mr. Harry Anderson to the stand if he is still here. Harry, would you like to come up here and answer one more question. You don't have to answer this question, but on page 6 of your presentation Mr. Shannon remarked about the need for a statewide fish and wildlife resource development plan. What are you talking about in magnitude of dollars?

MR. ANDERSON: In dollars, sir?

CHAIRMAN TEALE: Yes.

MR. ANDERSON: We have actually only planted seed for something here, I believe. We would have to take more thought for developing a plan as well as the estimate of cost. I dare say, though, it would be sizeable to do a good job. It would take some time.

CHAIRMAN TEALE: What do you think in terms of years?

MR. ANDERSON: Well, we would take it in stages. It seems to me, here again I'm just talking off the top -- I'd say several years for it, two years possibly for the inventory.

CHAIRMAN TEALE: I presume that you will have something worked up before budget time if you are going to ask for it?

MR. ANDERSON: We are not in a position, really, to ask for it as a Fish and Game program because we don't have the dollars to do a job like this.

CHAIRMAN TEALE: You got your boss sitting right here.

MR. ANDERSON: He will have to speak for that end of it.

CHAIRMAN TEALE: We will ask him.

MR. ANDERSON: It would be sizeable and it would cost money. However, we feel that this is something that would be well worthwhile and is necessary in the over-all picture for the future.

CHAIRMAN TEALE: Fine, thank you.

SENATOR SLATTERY: Mr. Chairman, could I ask a question? On these water programs that the State is now developing, Mr. Anderson, I presume that is placing more of a burden on your planning division, is that not so?

MR. ANDERSON: It has increased our workload substantially. However, we are receiving good assistance and cooperation from the Department of Water Resources not only in manpower from their own activities, but they are also helping us financially.

SENATOR SLATTERY: Are you able with the staff you have, Harry, to keep up with these things -- what I mean, are you able to go along with the project as it is being developed to protect the interest of the fish and wildlife, not after the thing is completed. Have you been able to go right along in their planning stages with your plan?

MR. ANDERSON: I feel, Senator, we have been terribly crowded and we are going along, but I don't feel that we have done as complete a job as we should have, and we do need more staff and more assistance to do a better job. There are delays on some of these projects. Project developers are definitely

not happy with delays. We are not happy, but in order to do the job we just have to string some of these things out longer than we would like to.

SENATOR SLATTERY: You feel that your ideas on these projects -- are they being listened to by other agencies?

MR. ANDERSON: I feel we are receiving good public support in most cases, and there is an increasing public awareness and support on fish and game projects today.

SENATOR SLATTERY: How about the Bureaucratic support?

MR. ANDERSON: Bureaucratic support?

SENATOR SLATTERY: That is the other agencies, are they being cooperative with you or do they consider Fish and Game sort of a poor relation?

MR. ANDERSON: No, I think we are very well accepted, and our relationships are good.

SENATOR SLATTERY: Okeh, that's all.

CHAIRMAN TEALE: Any other questions? Thank you, Harry.

MR. ANDERSON: Thank you.

CHAIRMAN TEALE: Our next witness is Mr. Charles DeTurk, Director of California Department of Parks and Recreation.

MR. DE TURK: My name is Charles DeTurk; I am Director of the Department of Parks and Recreation. I was asked by the hostess and manager of the Columbia House to say to you they were delighted that you had lunch with them and they are proud of Columbia and they are pleased you came up and enjoyed it. So was I.

CHAIRMAN TEALE: I'm certain the rest of the committee

did too.

MR. DE TURK: I think that it is timely that your committee take up these problems of competition for water, especially in consideration of rapidly expanding needs for water-associated recreation. I understand that the worthy objectives for your committee and this hearing are to try to determine the following two points:

1. What areas of water planning and study need further review because of increasing evidence of competition for water.

2. Determination of what relative weight in planning and study should be given the many uses of water, such as power, enhancement of fishery resources, public recreation, irrigation, navigation, preservation of water quality for domestic and industrial uses, livestock and flood control.

In answering the questions and supplying the information I have discussed your request with the three divisions of the Department of Parks and Recreation, Beaches and Parks, Small Craft Harbors, and Recreation. We have also counseled with the Departments of Water Resources and Public Health. In our studies we have found almost complete agreement with the recommendations we are making below to your committee.

Repeating your questions, you asked:

- "1. The number of people who will be using water for recreational purposes in California (whether residents of California or not) in future years. Estimates at 10-year levels would be preferable -- for 1970-1980 and for succeeding periods

so far as you are able to predict."

Unfortunately, we weren't able to predict it quite that accurately.

"(2) Would you include in the above estimates a breakdown of the kind of use, whether boating, fishing, swimming or others."

Our data was obtained from the California Public Outdoor Recreation Plan, which inventoried the recreational use of the State based upon survey data of 1958 with projections made for the year 1980. No estimates were computed for 1970, nor projections made to the year 2000. At the time, because of the many recognized variables, projections were not made for more than a 20-year period. And we would feel that straight-line projections of the Outdoor Plan forecasts to the year 2000 would be hazardous.

Inventories of the existing use of 1958, and estimates of use in 1980, were expressed in terms of "activity days". I should explain that. That is simply one individual taking part in one activity for one day or a portion thereof. So when I speak of so many activity days at a park or at a beach, it is one individual using that facility one day. It may be the same individual using it ten days in a row. He is then counted as ten activity days, so we have some basis for keeping that figure straight.

Our figures show that in 1958 we had 110,713,080 activity days in swimming and that the forecast for the need for swimming would be to provide facilities for 307,200,700 activity days in the field of swimming in 1980, or 177 percent increase.

Boating was 23,750,022 activity days in 1958 with a projected 101,884,100 activity days by 1980, or 329 percent increase.

For fishing our figures showed 22,441,600 activity days in 1958, which had increased to 56,995,000 days by 1980, or 154 percent increase.

Not to be overlooked as a legitimate recreational use of lands and waters is recreation travel or "sightseeing and study" which is where the sightseeing takes place over water. The Outdoor Plan did not specifically identify the demand for this activity for this kind of recreational use of water, but we do know that generally this activity accounts for more recreation than all other types of outdoor activities combined. From the inventories of use for 1958, the Outdoor Plan lists the following ranking order (exclusive of recreation travel, sightseeing and study, and community type activities):

Swimming was participated in by 47 percent of those interviewed; picnicking, 18 percent; fishing, 10 percent; boating, 10 percent; camping, 8 percent; hunting, 3 percent; winter activities, 2 percent; and riding and hiking activities, 2 percent.

Now, understandably both picnicking and camping are upgraded by having these activities take place where there is water for recreational use rather than where there is not, and the more water that is available for recreation, the higher both picnicking and camping figures will go.

Our department has been fortunate to have the custody

and the use of all the surveys and the working papers that were developed in the California Outdoor Recreation Plan. Since the publication of this document several agencies, particularly Water Resources and Fish and Game, have made forecasts of recreational needs for their specific programs, using the data developed by the Outdoor Plan. Inasmuch as you have invited them to make presentations, we have not included their forecasts in our statement to you.

Your questions 3 and 4 were as follows:

"(3) Would you match these estimates up against water miles (or any other convenient measurement) of reservoir, lake, stream, bay, ocean, et cetera, areas available for these recreational uses.

"(4) What expansion of water surface is necessary to accommodate these persons? What plans are underway for this expansion?"

In order to actually quantify the requirements of water-oriented activities it is necessary again that we establish some kind of definition so when I say to you "effective foot of beach" you know what I mean. So we have established four or five of these terms that we use. An effective foot for swimming has to do with a beach. Now, these are beach type or ocean beach type swimming facilities. One linear foot of shoreline, say this is a shoreline here, take one foot of shoreline, it should have in front of it 100 feet of water for swimming and wading. It should have directly back of it 100 feet of sand for sunbathing and

lounging and general beach play. It should have behind that 200, I beg your pardon, that beach here is 200 feet. It should have 100-foot buffer strip where sufficient necessary utilities are available, as in picnicking areas, where water supply and sanitary facilities would be placed, and a 255-foot strip back of that for necessary parking. That would give us a one foot of shoreline with water, beach, picnic area, sanitary facilities and places to park the automobiles to use that piece of beach. We figure 25 feet of this kind of shoreline would accommodate 1,000 people, so if there is a city or community of 1,000 people to be accommodated, 25 feet of that kind of shoreline would do it. Of course, 25 feet would be a little skinny for a thousand people at once, but this figures that they are not all there at once. In fact, all the thousand are never there. Maybe some of them don't swim at all, but the average number of beach users in a thousand population could be accommodated on that much beach.

Then, to make a standard or a definition for an access unit covering boating, we say that a facility capable of launching one boat at a time and serving 125 trailer-carried boats or storage facilities, berthing, mooring and the like for 100 nontrailer boats would be considered one access unit to the water. 160 surface acres of water suitable for boating should be immediately available for that particular launching unit, and the unit should be able to launch 50 boats per average day, not a peak day but per average day -- you should be able to get 50 boats off trailers and into the water or you wouldn't classify it as an effective

boat-launching unit.

When we say "an effective acre" that is of water for boating, and we just simply figure that each unit should have 160 acres of boating water available to it to take care of these 50 boats that are going to launch that day.

And in our requirement for swimming we try to apply these various definitions, and concerning the measurement of the need for swimming, there is an over-all deficiency now of 35 percent in terms of demand over supply in 1958. It is estimated that the deficiency will be three times as great in 1980 if the 1958 supply is not increased.

Now, I put these in table form as you see. The 1958 supply of effective feet for public swimming in California was 232,000, and the demand of swimmers for this kind of beach atmosphere was for 369,000 effective feet of beach. Our 1980 demand is estimated, or supply is estimated at 246,000 effective feet, and the 1980 demand at 1,715,000 effective feet of beach. So we have a shortage facing us if we do not do more than is currently funded to produce effective swimming beach.

And our requirements for boating -- our 1958 supply of surface acres of water in California -- now, this is exclusive of open ocean, small rivers and streams and noninventoried natural lakes, but the general mass of water amounts to 1.3 million acres. In 1958 we were not able to determine the demand for total acres of water, but we had 1,275 access units in this 1.3 million acres of total water with 200,000 effective boating acres serving

that 1,275 access units.

Our demand the same year was for 1,925 access units with 308,000 acres of effective boating water, so we were about 100,000 acres of boating water short and about 700 boat-launching facilities short.

Our 1980 supply, we would assume, is about 225,000 effective boating acres, whereas our 1980 demands for acres of water effectively served with launching facilities would be for 1,424,000 acres of boating water. We apparently have developed a shortage in that particular field, too.

Fishing has been adequately covered by the Department of Fish and Game so we will not particularly speak of that area. Our deficiencies and problems in swimming we will sum up: In 1958 we had 137,000 effective feet for swimming. In 1980 we will need 1,469,000 effective feet of shoreline for swimming.

In boating we had 650 access units, and 108,000 effective acres of water. In 1980 we will need 7,625 access units with 1,199,000 effective acres of water for recreational boating served by these launching units.

The portion of your question for that says, "What plans are underway for this expansion?" -- since you have asked for testimony from other departments which are all making forward-looking plans to meet these water-associated needs, I'll try to restrict my detailed comments to the Department of Parks and Recreation. However, I should reiterate the fact that a great portion of the problem and a great portion of the shortages is

being studied very sincerely and effectively by federal agencies and by the State Department of Water Resources, by the State Department of Fish and Game and by the Office of State Planning. There are many people sincerely interested in this problem and trying to work out the proper kind of answer. However, the Division of Beaches and Parks, I believe, as you know very well, in March of 1956 established its first 5-year master plan which was endorsed almost completely by the Legislature. On January 2, 1961, the State Parks Commission developed a program for California's beaches and parks. The intent of this program was to plan for five additional years specific projects for acquisition, development, maintenance and operation. The approximate present-day cost of this 5-year program is about 200 million dollars. This 5-year program was one of the principal reasons that the recently defeated State Park bond issue was proposed and was passed by the Legislature and submitted to the people. Within this program are projects which would materially enhance the water-associated recreation in the State of California.

More specifically, in connection with the Beaches and Parks' responsibility for projects under the State Water Plan, planning and development for recreation is expected to be complete at Frenchman and Antelope Reservoirs in 1963 and 1964 respectively. Coming up for planning and development are the very important reservoirs of San Luis, Perris and Cedar Springs. The Oroville Reservoir and West Side Aqueduct are also major recreation planning projects for the future. Completion of recreational

developments for Lake Elsinore is anticipated for the summer of 1963, which will add 2,000 surface acres of water, although they have to be purchased and put into the lake to make them available for recreational use. The Del Valle Reservoir will come under the responsibility of the Division of Beaches and Parks with maintenance and operation negotiated with local government. Expanded facilities are being pressed in the Delta for increased recreation at Brannon Island and Frank's Tract State Park. In high priority for acquisition and development are the Sacramento River Project, which would establish facilities along the Sacramento from the Delta north to approximately Red Bluff, if adequate funds are available. The same kind of study and the same kind of purchases will be necessary in the Delta area as developed by the Resource Agency's Delta Recreation Study Committee which is underway now and for which you people appropriated \$25,000 for experimental work on levee maintenance and levee preservation to try to keep this big Delta area in some kind of a recreational aspect so it would bring considerably more enjoyment to people than it might have under the kind of maintenance and operation which were going on last year when you made this money available. The expansion of all water-associated recreation is being pressed at Salton State Park area, where for many years it was considered too hot, too salty, too dusty, too dirty for people to enjoy thoroughly. Now it is a very well-patronized place. The Salton Sea has customers, camping customers mind you, every week of the year, even when it is 120 in the shade and they have to bring

their own shade with them, but it still serves a recreational purpose for the heavily populated southern part of California right in the middle of August, and it does a magnificent job during all these spring, fall and winter months.

Progress is being made through interagency negotiations for the development of state parks and recreation areas along the Colorado River. I think all of us in the Resources Agency are proud of the fact that we are able to work together, the Department of Fish and Game, the Department of Water Resources, the Department of Parks and Recreation, the Federal Bureau of Land Management, the Federal Wildlife people, the Corps of Engineers, in fact a great number of federal and state agencies, to help develop this large lower Colorado recreation area into a combined multiple-use unit which will serve all sorts of outdoor activities while at the same time conserving and preserving the water for the same uses it now has. Some of these will be done on the lower Colorado in the Picachio area and along the Lake Havasu area and generally speaking this planning, although it has problems, involving the squatters on agricultural lands, the squatters on recreational land, and it involves old leases, it involves mineral interests and a great many things, but these are being worked out with the people and with the various state and federal agencies who are responsible for them, and I feel that we are making quite some progress in this particular area.

The Division of Small Craft Harbors are now in the process of preparing their State Boating Facility Development

Plan. They started in early May of this year. The plan was started by a request from the Legislature during the 1961 Session for a \$40,000 study to determine the need, location, and basic components of coastal harbors of refuge. Now, in addition to that this study also will determine the need for and the location of access areas to water whether they are simple launching facilities or whether they are more complicated marina developments. This statewide study should produce the need and to show where the need can be met. The money appropriated by the State Legislature, the \$40,000, has had \$60,000 added to it by the United States Government in a cooperative planning program. The money was made available through the Department of Finance. The Department of Finance, the Department of Parks and Recreation are cooperating to produce this in order to guide the Division of Small Craft Harbors in properly placing the facilities for which they are responsible.

Stage 1 of this study consists of a determination of the planning areas to be covered, the facilities inventoried of what is now in existence and an estimate of potential development. Stage 2 will include a market demand analysis, a coordination of existing plans, and a determination of feasible sites for future development. Stage 3 will consider the costs of constructing and operating all possible facility development that might be developed. Stage 4 will contain the conclusions and recommendations of the boating facility plan being done by an independent firm of consultants.

Conclusions and recommendations will be made as to the types of services or facilities that should be provided through the Division of Small Craft Harbors, the locations within the State where such services or facilities should properly be developed now or during the planning period, the integration of the Division's plans with the plans and programs of the Federal Government and other state or local agencies, the approximate cost of development, the appropriate staging of integrated financing of the Division's programs over the planning period, and necessary or desirable modifications to present state policies and statutes in order to facilitate implementation of the boating facility plan.

The Division of Small Craft Harbors does not have a program for the development or for the creation of additional bodies of water for recreational use. However, within the general program of small craft harbors and boating facilities development, several projects have bordered upon this type of development, such as the contemplated dredging of Sausalito Canal to link the Mill Valley Harbor with San Francisco Bay, and the proposed filling of Lake Elsinore, dry Lake Elsinore with water. These are close to, in this case, close to helping provide water as well as to do facilities on water already in existence.

The Division of Recreation since 1947 has had quite a responsibility placed on its shoulders by the Legislature. The present program of the Division of Recreation emphasizes assistance to other agencies, particularly local government, in planning and organizing to meet their recreational needs among which water-

associated recreation has been prominent.

We feel that it is commendable that your committee is primarily concerned with recreation associated with water, but I'm sure that you will agree that in order to meet the recreational needs of the people of California we must consider water recreation in the light of the total recreational needs.

To a great degree, depending upon the availability of recreation opportunities, the public can substitute one type of recreation for another. The known flexibility of the public to receive recreation satisfaction from a variety of substitute activities provides government an opportunity to plan flexibly to meet total needs as well as give leadership in guiding people into desirable types of recreation. The availability of recreation in one location affects the recreational use of similar facilities elsewhere. Indeed, programs become competitive and no one agency of one level of government can any long plan and provide recreation without affecting the programs of other people. I think this is particularly pointed out by the fact that the Federal Government has found it necessary with this Congress to establish a Federal Bureau of Recreation simply to coordinate the federal activities in the recreation field. I forget how many, but there are almost one hundred federal agencies concerned in this, but basically the large ones, the National Park Service, the United States Forest Service, the Bureau of Reclamation, Corps of Engineers have a vast responsibility for furnishing water based as well as other recreation areas.

We feel that our Division of Recreation, a similar organization at state level, has a real function here to help coordinate the state units of government including local as well as state agencies in their wise planning and provision of recreational facilities for the use of the California public.

The responsibilities of this Division of Recreation is set forth in the Public Resources Code and asks that it recommend a comprehensive policy on recreation for the State of California, to study or cause to be studied the whole program of recreation and make long-range plans to have these needs met, to assist the Governor and the administration in carrying out this policy of coordination of recreation services of all levels of government, and to report annually to the Governor on needs for recreation of the State.

Now, I hope that we will be able to reorganize the recreation division so that it may do this part of its job which it has not yet done. It has almost confined its efforts up to now to cooperating with local units of government, and this other need is here and we feel that we should implement that and get the Division of Recreation doing the broad planning work that it has been charged with by the Legislature of California.

In answering directly your question No. 4 as to what plans are underway, the Division of Recreation recognizes its previously unassumed responsibility and we have presented to the Governor this kind of program. Likewise, the State Recreation Commission has worked very closely with me as Director in presenting

to the Governor a statewide recreation policy which is now being considered for adoption. It is my desire to assure that this program of advance planning and coordination is a practical one and that such a framework must meet the needs of the Department of Parks and Recreation, must meet the needs of the Administrator of the Resources Agency for coordination of all state agencies in this particular field. The State ultimately must provide to all agencies in the State up-to-date annual inventories of recreational needs, present supply of recreational facilities, of deficiencies and areas where needs should be met by all levels working together.

Your question 5 reads: "There is controversy over the use of reservoir water surface for body contact sports and other recreation where the water is committed for domestic use. Would you give your viewpoint on this controversy."

The Department of Parks and Recreation has given considerable thought to the recognized controversy over the provision of recreational opportunities particularly body contact sports on waters for domestic use. We do know, however, that throughout the United States and in California there are many domestic use waters providing outdoor recreation in varying degrees. I hope that my views on this controversy are as objective as possible.

In many areas of the State to meet recreational needs we must do all we can to provide recreational facilities even on waters which are eventually for domestic use. I am equally concerned, however, for safe potable water. There should be no doubt

in anyone's mind that minimum safety health standards should predominate over recreational requirements, if a decision is to be made as to whether or not waters can be used for both. Furthermore, we do have faith in our State Department of Public Health, and we believe that it is their responsibility alone to set minimum quality standards for domestic use of waters.

The major part of the controversy appears to lie in the various opinions of water purveyors as to what constitutes an adequate margin of safety for multiple-use of domestic waters. Those generally in the camp opposing recreational use will cite additional costs and administrative problems, as well as increased undesirable effects of recreational use causing increased turbidity, sedimentation, taste and odor of water for drinking. There is, therefore, a considerable "gray area" in the opinions among water suppliers as to whether or not the sometimes attendant undesirable, though safe, qualities of water resulting from recreation can be permitted.

It is the feeling of Park and Recreation planners that we need a more explicit set of standards to be developed by the Department of Public Health to determine when recreational use is compatible with domestic use. Recreation agencies should adhere to the minimum standards and preferably the optimum standards established by the Department of Health. Cases for recreation should be decided upon the willingness of the public to accept guaranteed safe, but perhaps occasionally less desirable drinking water which will also provide recreation. Should the decision be

reached on any specific project that recreation should be incorporated on the domestic waters, then there are a number of methods that can be accepted both by the water consumer and the recreationist as to the extent each user shall share in the cost of the project. In some cases, development of joint projects can provide water for consumption at less cost per gallon and, in many cases, especially in already established domestic reservoirs, recreation may cause an increased cost.

I look upon the problem of delineation of responsibilities of administration of recreation and development of a method for sharing the costs as relatively minor problems once recreational use is determined.

What really is needed, however, to ease this controversy is to be absolutely certain that the possibility of providing recreation on noncontroversial impounded or flowing waters has been exhausted before raising the problem on present single-use domestic water reservoirs. Under Question 4, it has been my expressed hope that the Division of Recreation in its advance planning process could make the necessary surveys to recommend for all levels of government as many waters to meet recreational needs as possible, so as to minimize the controversy of forcing recreation on single-purpose domestic use reservoirs.

I believe that the water purveyors over the state as a whole in the recent decade have yielded considerably to recreation pressures and have provided enormous amounts of recreation on reservoirs, especially those that are for primary storage a

considerable distance away from the water consumer. Here again, I believe the controversy would not be so great as many would think, if the State can assume the proper statewide recreation planning.

It was interesting to me to read an article by Gilbert Cross in the August issue of Fortune Magazine. I believe I sent all of you a copy of that article because he discusses recreation in a very enlightened and very objective manner. He recommends, for instance, that we should explore the possibilities in these great new reservoir programs which will impound and furnish lots of water, that some of the smaller reservoirs which these new ones replace, that they be retained for emergency water use and in the meantime be devoted exclusively to recreational use using the water normally from the new reservoir systems rather than from the old small ones. Now, whether those studies have been done in California yet or not I don't know, but this is the opinion of both Mr. Cross and the Manhattan Institute of Public Administration, which is a private organization in New York which also studies recreational problems. Both of these people in the Fortune Magazine article discussed the value of the creation of artificial or manmade lakes for recreation alone and this, I believe, in California can be done in several places without using up the water. It simply would impound it into a usable surface where the water, for instance, in the Sacramento could be halted and spread over a little larger area in certain spots where it might be used for swimming, boating, water skiing,

fishing, and a great many things all the time it is flowing right on down the river. It just spreads out a little more than it does now. I think that use could well be explored.

Your question 6 says: "It is agreed that a reservoir which is drawn down radically for other purposes has greatly decreasing value for recreation. Would you discuss the worthwhileness of mitigating reservoir fluctuations in the interest of recreation. Who should bear the cost?"

Unless there are other compelling reasons, we feel that recreation should always be considered as a beneficial use of any public or quasi-public impounded waters. With this right also comes the responsibility of sharing in the cost. When multiple uses, including recreation, are compatible and can be included to the economic advantage of all, maximum use should be the rule. If recreation is to pay part of the cost, it also should share in determining the desirable location of the project and minimum or optimum pool sizes or degree of drawdown.

Already we are building reservoir projects almost entirely for recreation purposes. On a statewide advance planning basis it is urgent that we quickly analyze where water recreation is needed geographically and plan to meet those needs rather than decide what projects we need for other purposes and then decide what recreation can be integrated with other primary needs. Today the greatest deficiencies for water recreation are within 40 miles of the major metropolitan areas. Determination of where water should be developed must consider these deficiencies.

A lot is being done to mitigate drawdown on pending State water projects for recreation. As a separable benefit, recreation should also pay a considerable part of the cost.

A great deal to enhance water recreation can be done, I believe, at much less cost in the moving of levees to provide downstream lakes for recreation on limited acreages along river courses, particularly in the great Valley. In this case, drawdown would be virtually no problem. Where recreation must be obtained from reservoirs and drawdown is a problem from other uses, serious thought should be given to developing smaller recreation reservoirs exclusively for recreation. In any case, recreation should pay its way, not necessarily at the gate of the recreation facility, but spread over a broader public nonuser base. Let us always remember that recreation, like education, whether we indulge in it or not, is of benefit to all of us by improving the society in which we all live. A positive program of government to increase the enjoyable and productive use of growing leisure will minimize spending defensively on programs to solve social problems resulting from lack of recreation opportunities.

Your question 7, "An argument has been made that user fees for use of water surfaces for recreation is a small part of the total amount spent by the person who enjoys water-associated recreation. Would you discuss this question of whether the recreationbound person should pay higher or smaller fees for use of water surface?"

Over the years in the field of recreation and park

management, few items have created more controversy than the amount of fees that should be charged for use of areas and facilities. Indeed, this issue becomes quite philosophical both as to your general theory of government, as well as to your theory of management of parks and recreation areas. There are a number of factors in determining what degree the recreation user should pay for his recreation at the gate of the recreation site.

Both the Legislature and the administration must determine:

- a. What will the traffic bear?
- b. Degree to which fee charges are necessary to compensate for lack of appropriations to meet public needs.
- c. Degree to which you believe it is necessary that the direct user shall pay his way at the gate.
- d. Degree to which you believe it is desirable to restrict use of public areas to certain income groups.
- e. Degree to which you believe the user should pay at least a portion of the cost to make him appreciate the value for proper use of areas and facilities.
- f. The degree to which you believe, as a right, the general public should have access to, and opportunity for exploration and viewing of publicly owned areas versus his responsibility to pay for specialized services he receives.

I believe that we all agree that some kind of balance must be achieved between all of these objectives. Basically, I

believe that it should be the over-all responsibility of this and future generations, through General Fund appropriations, to acquire the necessary land and open space to guarantee that maximum amounts of recreation can be provided at minimum cost to present and future users. There is a basic reason for this, namely, economics. Land will never be cheaper than it is today and even if we delay the guarantee of available lands for future use, we may find that they are lost forever and cannot be purchased, even at enhanced values. As stated under No. 6, we should consider recreation in somewhat the light as we do education and guarantee, as a right to all citizens, a minimum amount of recreation opportunities so that we will spend less on corrective measures for society's ills.

The degree of acceptance of the general public and the recreation user for paying at the gate or spreading the cost over a broader base varies from state to state, from area to area, and from time to time. There is no substitute for an agency dedicated to determining the degree of acceptance commensurate with desirability for paying for recreation opportunities at the gate. Because your question No. 7 is not specific as to type of project or location, or type of water-associated recreation, it is difficult to give a more specific recommendation to you now. A great deal more can be done through proper advance planning and appraisal of needs and resources to determine the extent recreation users should pay their way.

I believe that three years ago when I first met with

the California State Legislature we were taking in in the Division of Beaches and Parks approximately 14 percent to 15 percent of our total cost of operation and maintenance as determined by Mr. Alan Post's office. I believe at the 1962 session we had gotten that up to about 26 percent. We are working to achieve what we feel, and this is simply a feeling, an arbitrary thing, we feel that if we can bring this up to 30 percent or roughly twice what it was some time ago that we will have achieved a fair balance. Now, whether this is fair or not undoubtedly needs to be determined with some more study and some more application of fees and seeing how much they do bring in, whether they cut down the use of the recreational facilities or not. I would like to tell you what the City of Los Angeles has determined in three of their reservoir areas. I was there day before yesterday checking with their park people. They operate three of the Los Angeles area water reservoirs for recreational use. The recreational use is confined completely to boating and swimming. They spent in the recreational operation of these reservoirs in 1960-61 fiscal year, 106,151 dollars. They took in from user fees 114,134 dollars. They charged 18,814 dollars depreciation to their operating account so they did show a net loss for 1960-61. They do not expect to show a net loss for 1961-62 and their record for the 15 years that they have operated like this shows that over the 15-year period they have operated in the black including the depreciation on their recreational developments and on their

recreational equipment. The city operates the refreshment and a bait concession which pays 7 percent of its gross receipts to the city. The city charges \$1 a day for the right to fish on the reservoir for all people 16 years old and over, no charge for people under 16. The city owns and maintains its own boats which are rented at a rate of \$1.50 per half day or \$2 per day. They are rented by the concessionaire and the concessionaire receives 25 percent of the gross for handling the rentals and the operation of the boat rental facilities. The city owns the boats and does the maintenance on them. They feel that they have a good operation, one that is bringing them a fair break on their money, so it doesn't cost more money, and that people are getting a great deal of recreational use. Unfortunately, I did not get the total figure for the attendance at this kind of area, but I would like to say to you that as far as water-based recreation is concerned we know how many people the great recreation areas in California draw. They draw a lot of people. Yosemite draws a lot of people, Sequoia, Kings Canyon, Calaveras, Big Trees, Columbia, the great Redwoods in the Northwest, the Salton Sea, the beaches in southern California, but the biggest patronized recreation area in the State of California is the Folsom Lake reservoir with a 100-vertical-foot drawdown. It is bad, it is miserable, but it has almost 3 million user-days of fishing, swimming, picnicking, sailboating, water-skiing, in fact about anything you can imagine on the surface of the water. So up until about the middle of August or some time, almost the first

of September, this is the fact, that it is water, it is developed for recreation, it has adequate land around it now and I think that speaks well for the value of water-based recreation. I think that is one of the top things that the Legislature has requested and provided funds for to the Department of Water Resources, so that the recreational land is now planned with the reservoir instead of later. I think you all know the bitter experiences at Folsom where we had this old 300-foot-wide rim around the edge of the reservoir and where that land could have been purchased for \$50 an acre at the time the reservoir was purchased, we had to purchase 600 acres of it two years ago for \$750,000 to get adequate recreational use area. Well now, under our California Water Plan, these recreational areas are being planned and acquired at the same time that the reservoir is planned and acquired, and I think we will find that we are way ahead financially to be able to do it this way so these great new water areas will come into their own with adequate land for parking, for camping, for picnicking, for hunting, for fishing, for all of the uses that we need to make around the reservoir area, and that, I believe, is the key to how many people can use it, is how much land do we have around the water. I think we will find that that is the key to the Delta recreation problem, is to provide land on which recreation can be based so it can use the water that is right out there in front of them.

In your question 8 you ask, "Would you discuss the desirability of special tax levies on activities or equipment

connected with water-associated recreation, or of the diversion or receipts of fees or taxes paid by these persons to the financing of recreational facilities."

Well, here again there are advantages and disadvantages to each one of these ideas. The advantages are it would guarantee a continuing source of revenue for a specific use, where support of the function has had difficulty in gaining financing from general sources, that is either from the General Fund or from counties or from cities. A special type would produce a special revenue. Secondly it would assure that the services would be somewhat sensitive to the wishes of the recreation users. If he didn't like it he wouldn't pay for it and we would learn pretty fast what the recreation users did need, actually whether he became a customer or whether he did not become a customer. And the recreation user would see the specific benefits of his expenditures for his preferred activities.

Now, I believe that that is about exactly the way that the Activities Department of Fish and Game are financed. These are special things assessed against the user himself, the hunter and the fisherman and in some cases against his equipment, his gun, his ammunition, his fishing equipment, but he alone gets the benefit from it so he can see exactly what he gets for his money. That undoubtedly would be an advantage.

And the disadvantages, is that we could either over or under-emphasize the importance of a specific recreational activity by judging it all upon how much money it would bring in. That

could be a bad thing if we got too money-minded instead of people-minded. After all, recreation is for people, not primarily to make money. The administration of such a special fund might not easily be subject to the usual controls that other General Fund services receive and there is greater difficulty in altering the recreation program in accordance with changing times and needs if that program is based on the money that it brings in.

There is some credence, certainly, to be given to provision of a compensating tax fund, the theory that certain items generally considered less desirable should be taxed for other items which are generally considered more desirable, like recreation. It is interesting that we could then tax tobacco or liquor or pop, candy or gambling or horse races to subsidize things that we think are better, such as camping, swimming, picnicking, and hiking. It is the feeling of the Division of Small Craft Harbors, however, that the boating industry is already taxed to the maximum. Now, this conclusion finds some acceptance and some radical rejection among their own people and among people of other recreational interests. Arms, ammunition and fishing gear have a special tax already and the proceeds of those goes to improvement of sports fishing and hunting and research.

I believe that all possible sources of general funding for the general good of the total population should be explored in greater depth prior to recommending special tax sources. I for one would hate to see state park and recreation programs limited by the volume of people that choose to smoke cigarettes,

and if they chose not to we wouldn't have any park program -- if that is what we depended on, taxes of special items in order to get money to provide parks and recreation. It is really always a pleasure to study these things. I am delighted you asked us to do it and to make recommendations on these questions. I can only tell you that our department and our Resources Agency have been cognizant of all these things. We believe as you do that the answers to all these questions must be given more thought than they have had in the past. We think that the Department of Parks and Recreation and that the Resources Agency has a definite responsibility to make studies and to make plans so that the Legislature and all of the state agencies in this work and at all levels of government can base their program on some kind of a sound analysis of public need. We have not been able to do this as much as we would have liked to in the past. We are preparing a program to assure that this is done, and certainly we would be most happy to have your support in that program.

We have the Division of Recreation doing effective planning to determine need. We have the Division of Small Craft Harbors doing some very effective planning through a private consulting firm to determine boating needs. We have the recreational planning section of the Department of Water Resources doing effective planning in the West Side Freeway Waterway Recreation Program, in the Delta Recreation Program and in the General Water Reservoir Program, and we have the Division of Beaches and Parks doing its planning and programming on specific park and

recreation area locations. We are just a little shy in the field of over-all recreational planning and in trying to coordinate these that I just mentioned in the various agencies into a unit where we can determine needs, determine areas where the needs should be filled, and get some idea of the cost of fulfilling the need in these predetermined areas. Thank you, Senator.

CHAIRMAN TEALE: Thank you very much, Mr. DeTurk. I'm very much interested in a couple of your comments. You are a latecomer to the scene and are not as well acquainted with the controversy over the recreational use of domestic reservoirs as some of the rest of us.

MR. DE TURK: I have heard of it, and read just a couple of little items here and there.

CHAIRMAN TEALE: We have had some discussion of that in the past and I think you are aware of the study which the Department of Public Health did at my request on the effect of recreational use on water quality in reservoirs. Have you had a chance to analyze the report to see what it means to your planning program?

MR. DE TURK: I have had a chance simply to read it in almost a cursory manner. It is on my desk now. I went through it before I prepared, before we worked this up, and incidentally the public health reports and other reports of your water committee also.

CHAIRMAN TEALE: I might comment on the report, as far as I can see there isn't much effect upon water quality by the

recreational use. The effects seem to be one of offending the sensory senses of the people that are going to drink the water. It is imaginary as far as I can see. I think maybe some of your scientists should analyze it also and see what the thing means. I was interested in your comments on the use of small reservoirs, converting them from domestic storage to recreational use where the system has acquired larger reservoirs, and I was wondering if you meant by that such reservoirs as San Pablo and Crystal Springs and so forth, those small areas right in close to town?

MR. DE TURK: Actually I was using the information that Mr. Cross developed. I'm not familiar enough with these small reservoirs in California to say which ones, but I would be reasonably sure that a city that had developed a series of small reservoirs here to serve it and now has developed immense reservoirs way out, could possibly for a long time use these for recreational purposes alone depending on these for their water until they needed both of them. At that time they would probably have to take recreation off these, but in the meantime it would have given quite a good service. I'm sure that the people in Water Resources would know more about where these reservoirs might be, but the idea seems to be a good one.

CHAIRMAN TEALE: Well, the two I mentioned are right in the Bay Area, right within 20 minutes of town. I was also interested in your comments on the fact that in some instances reservoirs might be justified from a recreational standpoint alone, and I would like to recommend for your further study the

Agua Fria Reservoir down in Mariposa County. The Department of Water Resources is well acquainted with it.

MR. DE TURK: In Mariposa County?

CHAIRMAN TEALE: Yes. It appears to be one of these reservoirs that is close to a center of population and could be well justified on the basis of recreation. Any questions by the committee? Apparently not. Thank you very much, Mr. DeTurk.

MR. DE TURK: Thank you.

CHAIRMAN TEALE: Now we will have our last witness. Our next witness is Mr. Bill Warne, Director of the California Department of Water Resources, and I would like to bring you the glad word that most of the main members of our committee are home today. I said most of them, not all of them.

MR. WARNE: Mr. Chairman and Members of the Committee, The Department of Water Resources has been requested to discuss generally not only the matter of conflicting and complementary uses of water, but also the matter of available supply and present and future water uses and needs. I shall do this and also discuss briefly the areas of water planning which need further study in California, and suggest the relative weight which should be given to various purposes in carrying on our planning program.

The problem of competing water uses has been recognized not only in California, but also throughout the nation. After reviewing the question of national water supply and demand in a report to the Senate Select Committee on National Water Resources, the U. S. Department of the Interior concluded that the United

States has adequate water, if it is properly managed. The Department of the Interior also noted that in the future, the nation must manage its water resources more skillfully than it has in the past. In a companion report to the committee, Dr. Nathaniel Wollman, at that time temporarily with Resources For the Future, Inc., concluded that:

"The main feature of a national water resources program for the next few decades is the provision of a regulated supply of clean water capable of satisfying a variety of uses. If this is accomplished, the main elements of most other water resources problems can be simultaneously met."

Dr. Wollman concluded also that, in the West, if it is to share the projected population and economic growth, an increase in water supplies or increases in efficiency of use will be necessary.

Last week's Look Magazine carried an article by Dr. Gilbert F. White of the University of Chicago, entitled "We're Talking Ourselves Into A Water Crisis." In this article, Dr. White expressed doubt about the validity of the generally prevalent fear that the nation faces a water famine unless immediate remedies are taken. He also concluded that there is more than enough water for our growing country if we will just use it wisely.

I agree with these findings as they pertain to California. While California's problems of supply and demand are more intense than those in most other areas because of our aridity and rapid growth, they are similar to those for the nation as a whole. The

State's water supply is adequate to meet foreseeable needs if we will exercise the necessary skill and imagination in planning, timing and operating our water systems.

PROBLEMS OF CONFLICT. While California has the capability of meeting its water needs, there are present or potential conflicts which we must resolve.

The principal area of such conflict is that between competing uses. Competition in use develops under three general circumstances: when the quantity of water is inadequate to meet all demands upon the system; when one use alters the quality of water to the detriment of another use; or when the timing required by one use prevents maximum reuse.

Potential conflicts of water use now apparent are direct results of California's growth, a growth which we want to continue. For example, irrigation and urban needs tend to conflict at times both as to quantity and quality. Uses such as irrigation which require diversions from the streams and reservoirs tend to compete with fishery and recreation needs. Use of water for power production in some cases tends to conflict with irrigation and urban needs, and with fishery and recreation needs. Surface diversions tend to reduce ground water supplies. Most of these conflicts can, I believe, be resolved through planning.

Another area in which the potential for conflict exists is that between districts or other local bodies, between upstream users and downstream users, between the State and local agencies, and between the federal government and the state and local agencies.

Conflicts of these kinds, if they actually occur, tend to frustrate action.

I consider it an important part of the job of the Department of Water Resources to work out compatible solutions of water problems. We review plans of federal agencies and assist local agencies, as well as supervise the execution of the California Water Plan as a whole and the construction of the State Water Project. I am pleased to report that great progress has been made in improving coordination with the federal and local agencies involved in water development in California.

The department is, of course, working closely with other units of the state government to integrate all the programs that deal with water. The establishment of the Resources Agency of California last fall has facilitated this coordination.

PLANNING TO MITIGATE CONFLICTS. The answer, and I believe the only tenable answer to our State's problems of conflicts in water use, is real multiple-purpose planning. By this I do not mean just construction of multiple-purpose projects, but systematic anticipation of and planning for all water needs wherever they may appear. Our efforts to provide for all needs in connection with the State Water Facilities are, I believe, the highest expression to date of the multiple-purpose concept in water projects.

Differences in viewpoint or desire are bound to occur, of course, during the process of conceiving and planning individual water supply and distribution facilities. This is good.

Recognition of and attention to such differences help to assure that plans have been formulated to take account of all needs. Our collective goal should be to resolve such differences by constructing well-planned works and by managing our total systems most effectively.

The key to sound water resources planning is a solution to the vagaries of California's water supply. The outstanding characteristic of this supply is its maldistribution in terms of time and geography. Annual precipitation varies from over 100 inches in the mountains of the northwest corner of the State to less than two inches in the deserts to the southeast.

The mean annual natural runoff of California streams is 71 million acre-feet. There are wide annual variations. Flow has varied from a maximum of 135 million to a minimum of 18 million acre-feet. During the driest 10 years of record, flows averaged only 69 percent of the long-time average.

More than 72 percent of the runoff occurs north of a line drawn roughly through Sacramento. At the same time, 77 percent of present requirements and 80 percent of future requirements are south of this line.

Studies by the Department of Water Resources show that California's water requirements have increased rapidly in the recent past, and will continue the rapid increase in the foreseeable future. For example, total annual water demands by agricultural and urban uses throughout the State increased from about 21 million acre-feet in 1950 to about 24 million acre-feet

at present; and are predicted to increase to some 38 million acre-feet per year by 1990. These projections may be compared with an estimated maximum annual water requirement of some 52 million acre-feet, the ultimate envisioned in our Bulletin No. 2.

These estimates of future water requirements are, of course, subject to error, as is any prognostication of future events. The Department of Water Resources, however, is convinced that there is sufficient water available to meet all of California's foreseeable future needs, if properly controlled, prudently conserved, and wisely used.

Fortunately, we have the natural means to mitigate the problems of seasonal fluctuations and needs and the problems of competition for the limited water supplies in local areas. I refer here to the Sacramento-San Joaquin Delta and its strategic location with respect to the sources and needs for water. We have designated the principle of operation of the Delta as the "Delta Pooling Concept."

The Delta Pooling Concept is the fundamental premise upon which is based the operation of the federal Central Valley Project and the State Water Resources Development System. This concept recognizes the Delta as the central collection point for all surplus waters from the Sacramento and San Joaquin Valleys, as well as of water to be imported from the north coastal area. Demands for water from the pool will be met by exporting surplus waters now wasting through the Delta to the ocean during the winter and spring months, such surpluses to be firmed up by major storage

developments in the Sacramento Valley and the north coastal area, and by San Luis Reservoir in the San Joaquin Valley.

The advantage of the Delta Pooling Concept lies in its great operational flexibility. It provides a common point for replenishment and augmentation of surplus waters in the Delta from any source or sources in Northern California. Moreover, it enables the adjustment of use on upstream tributaries by altering releases from major storage reservoirs on other streams.

Other equally imaginative operational methods can be expected to be devised in the future to assist in solving local problems.

PLANNING STUDIES NEEDING FURTHER ATTENTION. Finally, the committee has requested our views as to the areas of water planning and study which need further review in the light of increasing demands upon our water supply. There are a number of areas which we feel are particularly important. First, we must carry on a continuing program to anticipate and plan for meeting our water needs as they arise anywhere in the State. While this will require continuing effort by federal and local agencies, the State of California must assume a major role in guiding this planning program. In recognition of the need to plan on a broad basis, the department, in 1957, centralized its long-range planning into our continuing Water Requirements and Project Staging program. This program has the objectives of (1) determining future requirements for water and for water-associated functions of flood control, power generation, and recreation

throughout the State, and (2) formulating a sequence of water development facilities to meet these requirements. I consider this the central planning activity for water resources development in the State. It is not duplicated by any other agency. This is appropriate, as the State of California is the only agency that properly has responsibility for the development of the water resources in all areas of the State for all beneficial uses and purposes. We cannot look to the federal government or to local agencies to do this statewide job for us.

Secondly, greater effort needs to be directed toward increasing the efficiency of our water use. This can be done by increasing the effectiveness with which irrigation water is used; by increasing the reuse of industrial water; by reducing wastage; and similar means.

In this connection, the department recently published Bulletin No. 80, entitled "Feasibility of Reclamation of Water From Wastes in the Los Angeles Metropolitan Area." This report states that sizeable amounts of water now being wasted to the ocean in the Los Angeles area could be reclaimed. The potential for reclamation in 1955, the year analyzed, was approximately 195,000 acre-feet, or 40 percent of the volume of waste water discharged.

Third, we should seek to increase our effective water supply, not only by the construction of storage works, but also by other means. One of these is the conjunctive operation of ground water basins. With the decreasing availability of

suitable economic surface reservoir sites, the use of ground water basins will play an increasingly important role in California's future water development. Ground water basins must be operated in conjunction with surface storage to provide for conservation of local supplies and for seasonal and cyclic regulation of imported supplies. We need to continue and intensify our studies of ground water basin management.

For the longer-range future, desalinization and weather modification may be of value in increasing our effective water supply. The Department of Water Resources has been carrying on modest programs to study and keep abreast of technological advances in these fields. I believe that these programs should be continued.

In addition, a number of other possibilities for increasing our effective water supply merit continued study and attention. These include vegetative management in watershed areas to reduce consumptive use; evaporation suppression and seepage control on reservoirs and irrigation systems; studies to improve techniques in waste water reclamation and to reduce the need for dilution of water in streams for quality control.

CONCLUSION. California is destined to continue to grow. Her location in an arid and semiarid region makes the supplying of water for her development a major problem, if not the major problem, of the State. Sufficient water is available, though it is poorly distributed by nature. Local agencies and the federal government have built many projects, and now California has

adopted a statewide water plan and begun to build a statewide project to meet statewide water needs as they are foreseen in the next 30 years. Local conflicts growing out of competition for inadequate local supplies may be expected, but there are means, if they can be studied out in time, of resolving such conflicts. The Delta Pooling Concept points one significant way. Conjunctive use of ground and surface water provides another. In the future, desalinization of a part of local supplies in remote or seacoast areas may point out another way of solving acute local problems. The broad lesson before us is that continued long-range planning is essential to avoid as many crises as possible in the future.

Frankly, I think California is ahead of all other states in her water programs, thanks to the foresight of such people as the members of this committee right here. It should be possible, with perseverance, for us to resolve the problems presented in the future.

CHAIRMAN TEALE: Thank you very much, Mr. Warne. You were here this morning when we were talking with Mr. Silverthorne about water rights and issuance of permits, and I think you probably heard his discussion of the fact investigation of permits already granted for a long period of years proved that they were not in many instances utilizing the water which the permit granted. To what extent do you think this affects the amount of water available?

MR. WARNE: Well, obviously that water is still available

if it isn't being utilized, but it may complicate the use of it in some downstream areas. I wasn't aware until Kent discussed this matter a few days ago that there were as many of these licenses or permits that were not being lived up to in detail as seemingly that investigation indicated. I think it does introduce a complicated factor into management.

CHAIRMAN TEALE: You discussed in here a little bit of what I term "water management." Do you think that true management of these waters to make them more available when they are actually available would require a change in concept so far as water right law is concerned?

MR. WARNE: Well, I'll say this, that I believe the State Water Project itself does involve somewhat of a change in concept of the water rights. In other words, we are selling under the contracts with the state projects water service and not water rights, and those who buy this water get it as long as it is available, and the State has endeavored to contract to find additional supplies at the cost of the contractors if and when the upstream users need some of the water that may at this time be pledged to that project. Now, this is a utility concept of State water development and it seems to me that it is a perfectly sound basis on which to project this great interregional project, which I think will be expanded in the future. I don't mean by that -- I wouldn't suggest that any diversion be permitted to upset a vested right, but it also seems to me appropriate that this kind of project meant to adjust the water supplies over a very wide

area should stand on its own base and not preclude or prevent the development of local water supplies as they may be needed later on. This concept, I don't conceive this as a change in what we are doing since it is already authorized and is underway, but it certainly is not the traditional concept in California.

CHAIRMAN TEALE: I think you are aware that many of us in the Legislature, and we represent very large numbers of people in the State that are concerned, that as the water developments go ahead, the federal developments and state developments and local developments, and permits are granted by the Water Rights Board and licenses are eventually granted, that when we do eventually need some water in some of these areas of origin, that it won't be there to be passed out to us, and of course this is, I think, the thing that Senator Christensen was trying to get at this morning and the thing I am very concerned with, particularly as the competition increases for water among the various users including your recreational users and Fish and Game people.

MR. WARNE: But, Senator, the State Water Commission in the release of priority of the State filings has been reserving to the upstream users for later use such quantities of water as may be needed. Now, I realize that this reservation so far hasn't been used, so far as I know, anywhere in the State, but I think that coupled with the plan of operation of the State Water Project provides as good a protection as we could devise at this time for the upstream areas that may develop later. Now, I'm in great sympathy with upstream areas, let's say the more remote areas

that presently are less developed than the valley lands or the downstream areas, because I'm absolutely certain that the time will come when it will be to the interest of not only the local areas but the whole of our State that these areas also be developed.

Our department has been trying to develop all of its programs consonant with having water available to draw it back, to reserve its use for these areas, and our hydrographic unit studies have been trying to identify the potential uses that may eventually be made upstream. As I say, I don't know whether any of us can be very sure about the accuracy of a very long-range forward look, but certainly we can commence to see pretty clearly for 30 years and the trends are being established.

I imagine that there will be some surprises in what happens in the next 30 years just as there have been surprises in what happened in the last 30 years, but we are a lot better off now, I feel, on the basis of our studies than we were 30 years ago, and I believe the methods that have been provided to us and for us are superior.

CHAIRMAN TEALE: Since you are a water engineer, I don't hesitate to ask you an opinion on water law. Under these present laws that the Water Rights Board is operating under, and you, of course, are an agency appealing to them for permits, do you feel that they would have the right to review the use to which water under present permits is granted and if they find that they are not being utilized and there is no possibility of their being utilized that they could revise the permit?

MR. WARNE: Well, I have always understood, again passing judgment not being a lawyer, I have always understood that beneficial use was the measure of right.

CHAIRMAN TEALE: That depends on who you are talking to. Us mountain boys are a little afraid of arithmetic when they add two and two and two and get six where there is only five available sometimes. Senator Christensen, do you have some questions?

SENATOR CHRISTENSEN: I have always understood that we don't have any question of water law until we have a question of water shortage. The law of water rights is the law of water shortage. Everybody has been talking here today about the question of allocation for a recognizable proper use. The question that prompted the thought, that prompted the question of Mr. Silverthorne this morning as to whether or not in this general over-all planning for the development of the State we are including any consideration or means of preserving the water needs of those areas that are not as developed today or even as to those people and those areas who are actually applying it to beneficial use. Of course, as I understood Mr. Silverthorne's testimony, any of those particular individuals today would have to engage in litigation with your department. You are armed with the taxpayers' money and counsel and consultant and staff, and they would have to engage in litigation with your department in order to preserve those presently used rights. And I would like to pose the same question to you, do you think there should be included some equitable method of protecting those rights other than that which the

State Water Rights Board today affords, also including potential uses?

MR. WARNE: Well, I thought I discussed at some length a minute ago, perhaps not too clearly, the idea that I had, which I understand to be the basis on which the department is planning water programs, namely, the protection of local uses, not only protection of the present local uses, but also endeavoring to foresee and forecast what they are going to be in later times and then reserving even beyond that the right for them to withdraw water if needed in the future, beyond any anticipated need or project developed for local purposes. Now, I don't like to picture myself as the big bad bureaucrat ready to gobble up local water users because I have always thought of the Department of Water Resources as the agency of the government which has the responsibility of trying to resolve the water needs of all areas. We have fought some pretty mighty battles for some rather remote and less populated areas in this field, and I think we will fight a lot more of them. As I said, the State Water Project has pledged to it no specific water excepting only that which it develops, and in the event we developed more water in support of a 4 million acre-foot diversion, it will have to be developed at the expense of those people who have contracted to receive the water. I think this is an appropriate concept. Also I believe it is a great advance over any other project of this sort that I know of in the West. I think it's got the protection of the local areas built in. If I didn't think so, I would be suggesting

changes in it because I am convinced that the local areas, even though they haven't developed yet or aren't ready even to consider some of the developments, or even though they may reject in this day a development that is proposed, and I know one or two instances where they have, I don't think that development should be precluded, and we are not planning to preclude it.

SENATOR CHRISTENSEN: As I understand the law today, of course the department is specifically charged with responsibility to go ahead and complete the State Water Facilities under the State Water Plan.

MR. WARNE: And also with responsibility for the development of plans for development of water resources to meet the local needs. I mean these things are not exclusive.

SENATOR CHRISTENSEN: Yes, but specifically your money is appropriated, the people of the State have backed it however well advisedly or otherwise in approving the Burns-Porter Act, placing upon the department the specific responsibility of the Feather River Project for practical purposes. We in our discussions here today are concerned with what the future will hold. So far it has been developed that even as to certain areas included within the State Water Facilities there may be vested rights, if we can use that term, where people who are now applying water to beneficial use will not be protected unless they come forth and engage in litigation. That is Mr. Silverthorne's testimony, as I recall it.

MR. WARNE: Well, I don't think he was projecting a

case in which you were going in and filing on other water. The waters that we have filed on for the State Water Project specifically protects the vested rights. I mean we can't take water that is vested.

SENATOR CHRISTENSEN: Isn't that true?

MR. WARNE: We have no intention of doing that.

SENATOR CHRISTENSEN: Maybe I'm in error, but I believe the State has filed as a successor to the Department of Finance on all the unappropriated waters in the north coastal area, for practical purposes, the Eel, the Van Duzen, the Mad, the Klamath and the Feather River, for that matter.

MR. WARNE: That has been done on all waters, but that is not for the purpose of the State Water Project. That is to protect these water rights, to insure their use in connection with the California Water Plan, and the California Water Plan specifically recognizes the local developments and endeavors to set out local developments. I mean we can't use those filings. Even though we make them, we can't use them unless we go before the State Water Commission and indicate that it is in accordance with the California Water Plan and then go before the Water Rights Board with our filings, so we are simply the custodian of these undeveloped waters or rather our Water Commission is the custodian. We are simply the instrument through which these filings are made and often they are made at the behest of local interests such as irrigation districts or county boards of supervisors who want these waters protected.

SENATOR CHRISTENSEN: Getting down to the specific act, the last part of that procedure where you do apply and carry out the provisions of the development of the State Water Facilities, isn't it true that the individual owners, individual users up there, the individual local agencies, must come in and protect their rights before the State Water Rights Board in which the Department of Water Resources is the adversary claimant?

MR. WARNE: Well, you posed that question to the Water Rights Board and they know more their procedure than I do.

SENATOR CHRISTENSEN: I was just suggesting to Mr. Silverthorne, and I make the same suggestion to you, would it not be advisable to have some state law that would govern the State Water Rights Board in having some independent responsibility to protect those present and future potential needs of the county of origin?

MR. WARNE: I think our investigations are designed to, and in most cases do, pretty well accept the local vested uses of the water. I mean we go through these things by hydrographic units, and we only talk about the waters in excess to those that are locally developed. We try to identify all of the uses in an area. We only talk about the water that is excess to these uses. Now, we don't have any process by which we issue a fellow a certificate, but we certainly respect his right to protect before the Water Rights Board or in Court or anywhere else his right to the use of this water that he has been using.

SENATOR CHRISTENSEN: I was suggesting that's a most

inadequate remedy for those who are presently using waters beneficially and also for the protection of these areas. While it may well be a matter of very commendable administrative policy under your direction, the suggestion was made whether it would not be advisable to have some independent responsibility placed upon the Water Rights Board itself, particularly where the Department of Water Resources is the adversary party, to those whose interests we are speaking of.

MR. WARNE: Well, I certainly don't want the Water Resources Department to develop into an agency that is a threat to any area of the State, because it ought to be partners.

SENATOR CHRISTENSEN: Legislation was proposed at the last Session which passed the Senate and which was designed to do that specific thing. It may have been that in view of the atmosphere generated by the discussions over the passage of the Burns-Porter Act that proper consideration wasn't given to that and the department may have reflected a concern over the passage of that legislation. Now, the Burns-Porter Act has been passed, approved by the people, do you not think it would be advisable to incorporate into the law of this State that responsibility upon the State Water Rights Board?

MR. WARNE: Well, I don't want to limit the responsibilities of the State Water Rights Board.

SENATOR CHRISTENSEN: Not to limit it, but in order that they might share some of the responsibility now undertaken by the department, and to spell out certain ground rules whereby the

State Water Rights Board would do that?

MR. WARNE: I'm not sure I fully understand, Senator, what it is that the department may do that would in any sense be a threat here.

SENATOR CHRISTENSEN: Well, we are speaking of providing a practical remedy for the user of water today in one of the areas where water is sought to be appropriated and diverted to another area of the State outside of the county or area where it originates, and many people in there are not protected by license or permit or right to take water. Their only remedy, as I understand it, and Mr. Silverthorne's testimony apparently confirmed it, is to come in and object, intervene, participate in that action in which the adversary is the Department of Water Resources. Under those circumstances it appears to be a real hazard to the protection of those present vested interests and the ultimate needs of the county or area, and the suggestion was made and it was contained in this legislation we referred to which was defeated in the Assembly, whether the Water Rights Board being the tribunal which acts upon these applications, should not have some independent responsibility to make some express reservations of these vested interests and of the future needs of the area. That is confined, of course, to beneficial uses, in other words, to spell out, which I understand that is exactly what the department is considering today, but as a duty upon the part of the State Water Rights Board.

MR. WARNE: Well, as Senator Teale very cogently pointed out, I'm not a lawyer, but when we get to this question, I don't

know of a single instance yet where we have gone in on a north coast or anything else and tried to take any water.

SENATOR CHRISTENSEN: You haven't done anything on the north coast. That is what we are a little concerned about.

MR. WARNE: I was just pointing out we hadn't done it, and certainly the only remedy is not to fight us in court since we haven't done it yet, and they can go to the Water Rights Board any time. And furthermore, the department is devoted to the preservation of their legitimate interests over there.

CHAIRMAN TEALE: Could I interrupt a moment, Mr. Warne?

MR. WARNE: I don't think for a moment we would want to divest them.

CHAIRMAN TEALE: I think the problem, I'll interpret this in words of one syllable. I'm not a lawyer either, but I think that the problem that Senator Christensen and I are both concerned about and many other people, too, is this, that the Department of Water Resources is going to be developing a statewide water system and is going to be before the Water Rights Board asking for permits for unappropriated water. Mr. Silverthorne indicated to us this morning that the Water Rights Board apparently had no directive from the Legislature or requirement that they investigate unpermitted uses, uses that are presently unpermitted. Even though your department investigates this prior to the time that you ask for a permit, I think our concern is that perhaps the Water Rights Board should also be charged with the responsibility of investigating to be sure that you don't make

a slip and overlook somebody and then later on this man has to get into a controversy in court to protect his legitimate use of that water that he has made use of for a long time.

MR. WARNE: Well, it is possible, of course.

CHAIRMAN TEALE: We don't mistrust you. We just don't want you to make any mistakes.

MR. WARNE: I don't want to make any mistakes either, but, of course, it is possible that the department having taken on the new role of constructor of a great utility system may have some dichotomy within the department. I don't know. I haven't seen evidence of it yet, but it is possible that that may exist. In other words, our project planning function of the past may be less objective in the future owing to the fact that we have the responsibility for building this great system itself. You may need, if this should prove to be true, you might need a check on the department or perhaps we ought to separate the utility function out of the department or bring it into some less integrated position in the department. I don't know. We are very earnestly trying to create this entity at the present time through such methods as setting up the accounting procedures and all the ratemaking devices and virtually a separate staff for it now. We are trying to create the institution.

Now, it hadn't occurred to me that the existence of that institution would tend to water down the objective of the other functions of the department, but if there is any danger of that, I think it ought to be faced realistically and something

ought to be done about it. I am absolutely committed to the protection of the local user, not only now but also to his future needs. I'm not interested in relieving him of the necessity of paying for works that are going to serve him, but for the protection of the right to develop in the local area I think this ought to be reserved.

SENATOR CHRISTENSEN: The legislation designed to place that responsibility upon some state agency, whether it be the department, the State Water Rights Board, as a matter of substantive law, would apparently be desirable?

MR. WARNE: Well, at least we will study it again, Senator, and I'm not precluding or trying to anticipate the results of that study either.

SENATOR CHRISTENSEN: We are not talking today about what the law is but what it ought to be.

MR. WARNE: I understand.

SENATOR CHRISTENSEN: I take it that your position is that if there is any necessity for any such safeguard of the present users or potential needs, it should be incorporated into law?

MR. WARNE: It certainly ought to be considered, I grant you that.

SENATOR CHRISTENSEN: Favorably?

MR. WARNE: How realistic is the danger? I think that is the answer to that question. If it is a real danger, then favorably.

SENATOR CHRISTENSEN: Thank you.

CHAIRMAN TEALE: Mr. Warne, I would like to ask you a question about the internal operation of your department. You may or may not have an opinion on it. I have gathered from you and from others today that we must plan for multiple use of our water resource. In the past I think, or at any point in time I think you will find your engineers, your planning people, will be concerned with the field in which they are most versed; in other words, if an irrigation man is working on a portion of the project, he will be interested more in the irrigation features. Do you have any difficulty in getting your staff to accept the multiple-purpose concept?

MR. WARNE: I think we have done very well at this. Now, two or three references were made by previous witnesses to the joint recreation and joint fisheries studies that are underway in connection with the State Water Project. Now, several of these are wholly financed by the Water Resources Department. In other words, I think our engineers have recognized the fact that all collateral uses need to be considered and that no project could be considered satisfactory that ignored or simply paid no attention to a collateral use. Now, I think we are doing the best job that presently is being done in the business of planning for multiple uses and in part it is because I believe our basic law is better. I think the legislation that you gentlemen have armed us with in the past, for example, that which clearly makes fish and wildlife a beneficial use of water, that clearly directs

the department to consider recreation in connection with the planning of projects, and these are only the two most frequently overlooked, but equally you could go down the line and enumerate the others, and I think this is better law than any other water planning agency has to work with at the present time.

Now, the Federal Government has made quite a number of advances along these lines in recent years and it is possible that they are as well armed as we at the present time, but if they are, it's only been very recently.

CHAIRMAN TEALE: I'm glad to hear you say that because as I recall, many of our proposals were not greeted with any loud cheers at the time the proposal was made. It was a matter of putting a bulldozer behind them and pushing them through.

MR. WARNE: This was long before my day.

CHAIRMAN TEALE: I realize that. Senator Johnson, any comments or questions?

SENATOR JOHNSON: No.

CHAIRMAN TEALE: Senator Slattery?

SENATOR SLATTERY: No.

CHAIRMAN TEALE: Mr. Lunardi.

ASSEMBLYMAN LUNARDI: Mr. Warne, in view of your comments to make sure that we do have adequate supplies of water in all areas of the State of California and that these available waters will be demanded and used in the future, as you well know, in the 1963 Session we will probably be faced with a very controversial issue of pricing where agriculture is concerned. Is your department

going to consider recommending to the 1963 Legislature pricing in this field above and below the Oroville Dam?

MR. WARNE: Well, at the present time, the areas above and below Oroville Dam, that is from the Oroville Dam down to the Delta, are governed by the Delta water rate, which is a composite rate which does in fact relieve the local agencies of some of the costs and is generally beneficial, especially above Oroville Dam. What our recommendations will be concerning this matter in the 1963 Legislature I hesitate to predict at the moment because we are working under the plan of uniform rates spelled out in the law and in the contracting principles, and so far we have been having pretty good success with the negotiation of contracts. It is true we have not been able to negotiate one under Frenchman Dam, but I anticipate this problem, too, can be resolved.

ASSEMBLYMAN LUNARDI: Well, as you know, there is quite some concern as far as agriculture is concerned on the unit cost of water and whether or not they have the ability considering the residual income as to whether or not they can afford to pay the price which was established I think somewhere around \$18 an acre-foot or something of that extent which was quoted up north here not too long ago, if I recall, unless this was a typographical error in the newspaper.

MR. WARNE: It might be a typographical error in regard to the area because the cost, for example, in Sierra Valley is \$3.50.

ASSEMBLYMAN LUNARDI: But this is a concern, and I know that pricing is going to be a subject of real consideration by the Legislature, and in view of these circumstances coming up at that time I was wondering -- the question was as to whether or not your department was going to come up with any recommendation to the Legislature as to what should be done in these pricing fields aside from your Delta pool price and your transportation costs price in the field of agriculture, and I think this is the prime concern.

MR. WARNE: Well, I'll say this, that we are presently working under the law and the contracting principles and at this time we believe that these are appropriate in connection with the contracting problems that we have before us now.

ASSEMBLYMAN LUNARDI: The question now is: Are they acceptable?

MR. WARNE: Well, I don't think you can say they are unacceptable.

ASSEMBLYMAN LUNARDI: It all depends upon whether agriculture can buy this water. This is the question I am asking, if you take it or leave it, what are you going to do?

SENATOR DONNELLY: The farmers will have to let their land go dry. Mr. Chairman, why is it that the State hasn't seen fit to give some of the benefits the Federal Government has given in their development to those engaged in agricultural pursuits?

MR. WARNE: I don't understand.

SENATOR DONNELLY: They get a lower water rate and they get the benefit of lower priced electricity and several other benefits that the people who will contract with the State along the waterway down to Los Angeles are not going to get, as I understand it.

MR. WARNE: Well, the Federal Government does not have to pay interest, or at least it doesn't pay interest on the money that is devoted to irrigation in a water project. Now, this is the only benefit extended by the Federal Government that is not extended by -- yes, I guess it is the only one, at least it is the major one that is extended by the Federal Government that is not extended by the State under the law and under the contracting principles. The law requires us to get the cost of the project back, that is the reimbursable cost. The nonreimbursable costs, such as those for recreation, fish and wildlife, flood control, we are not charging to the water users. Power will more than pay its way. As a matter of fact, it will make quite a contribution to the water in the San Joaquin Valley, for example, just as it makes some contribution in the Central Valley project to the water users, but the big difference is that the State has to pay interest on all of its bonds, and we have to plan the project to return those funds.

Now, if it were possible for us to allocate nonreimbursable or noninterest-bearing costs to irrigation, then you could get a lower water rate for irrigation, but if you did that, the general taxpayer or someone would have to carry that burden,

and up to this time there hasn't been any proposal as to who is going to carry that burden, and we are definitely instructed by the law to get the money back.

SENATOR DONNELLY: Does the law instruct you not to give any benefits or any consideration to agriculture?

MR. WARNE: I think, at least the reports of the various committees have indicated that the matter ought to be set up on a unit basis and that is what we have tried to do.

SENATOR DONNELLY: Well, in other words, they are in favor of constructing this dam and running the water down to Los Angeles without any benefits to anybody in the San Joaquin Valley? Most of agriculture cannot afford to pay the price that I have heard stated.

MR. WARNE: Well, Senator, there have been a good many agricultural interests and irrigation districts asking to contract, and I'm sure we are going to get contracts.

SENATOR DONNELLY: Well, they might in some special fields.

MR. WARNE: They are in the San Joaquin Valley.

SENATOR DONNELLY: I don't think you could raise alfalfa or any of the crops that are grown in the valley at the price -- what is the price? I have heard it stated around \$18. Is that right?

MR. WARNE: Well, for the area in Kern County, the farthest from the Delta, the price is apt to be close to \$18, yes. But it wouldn't be that much in some other parts of the valley.

ASSEMBLYMAN LUNARDI: May I ask a question, hasn't Los

Angeles taken the position that they feel that above the Oroville Dam the users in that area should be subject to a rate which would assist in the over-all plan?

MR. WARNE: So far as I know, they haven't expressed any -- I mean the Los Angeles people, I know of no one who has expressed any opinion or urged any position on the department with regard to the users above Oroville Dam. The users above Oroville Dam have been extended the Delta water rate. If they had not been extended the Delta water rate, in other words, if the reservoirs up there had not been included as conservation works in the definitions of the project, we would have had to ask about twice as much for the water in Sierra Valley as the Delta water rate. The costs actually allocable to irrigation out of those reservoirs up there would be greater than the Delta water rates.

ASSEMBLYMAN LUNARDI: I have heard trickles of this through water hearings on the Assembly side and I presume that your department would not take this into consideration if a proposal of this type came up, such a proposal as this?

MR. WARNE: No one has proposed it. We feel that the Delta water rate is pretty well established and I don't know of anybody who is objecting to it at the present time. I mean anyone who has to pay it or who feels that it is granting a subsidy to anyone, they haven't come to me. I know of no one who is objecting on that ground to it.

ASSEMBLYMAN LUNARDI: There are a few.

CHAIRMAN TEALE: Senator Slattery, do you have a question?

SENATOR SLATTERY: Yes, Mr. Warne, let's just project ourselves for a moment into a new area now that you have not so far done any work in, and that is the north coast area, and I am particularly thinking of the Eel. Now, is it not true, or is it not possible that provisions in the Metropolitan contract making the Delta price the base price from which all other prices are figured, would that price apply to water developed in the north coast, and I'm speaking of water which would be used in the local area, would that have to start with the Delta price as a base and then take upon it other costs on top of that?

MR. WARNE: Frankly, I haven't crossed that bridge yet, Senator, and I don't believe we have crossed that bridge, but my anticipation is that the Delta water rate will be lower than any conservation rate would be in the development of a project on the north coast. Now, I say that only because those reservoirs over there are not the most economic. They are difficult reservoirs. I haven't got any real study to show this, but I feel certain that if a local rate can be fixed, that is, if it is appropriate, through an irrigation allocation to a reservoir, let's say at Spencer Valley, to get a cheaper rate downstream than the Delta water rate, I'm sure that is what we will do. But the water that goes from there over into the Central Valley would go into the Delta water rate, and the Delta water rate would reduce its unit cost, though it might raise the unit cost of the Delta water rate, do you see?

SENATOR SLATTERY: In other words, when you mix the

more expensive water from the north coast, then you will take an average cost which would apply back to the north coastal area?

MR. WARNE: I think not.

SENATOR SLATTERY: You think not?

MR. WARNE: As I say, I haven't crossed that. I think that the local irrigation requirement over there might well be a separate allocation in the reservoir.

SENATOR SLATTERY: I would just like to comment that I think sometime in the not-too-distant future some of these things should be spelled out because we are looking forward in the north coast to some water development both locally, and we certainly are looking forward to the time in the not-too-distant future when the Eel River and some of the other rivers on the north coast are going to have to be developed for the central and southern part of the State, and I get these questions asked by my constituents all the time, when is this going to happen, how are we going to price it, are we going to use the Delta price or are we going to pool the two sources, how much is it going to cost us, and I think it is time that the Department of Water Resources did some work on this thing anticipating what you are going to have to do in the not-too-distant future.

MR. WARNE: We are certainly working on it now and have been for some time. The preliminary north coastal report is out which simply indicates where these projects are and the work that is going on at the present time tries to identify or will try to identify the areas that might be served locally downstream from

these dams, and we will answer that question in connection with it. My own horseback opinion is that the Delta water rate in all likelihood in most of those reservoirs will be the cheapest rate that could be gotten out of it.

CHAIRMAN TEALE: Mr. Warne, this morning we were discussing with the Bureau of Reclamation the function of water pollution control as one of the functions of multi-purpose projects. We were discussing whether or not water used for this purpose would be a reimbursable or nonreimbursable use. I should know what your answer is, but I would like to hear it again because I have forgotten.

MR. WARNE: Well, I think again the State Water Project as it is superimposed on the other utilizations of the river system, including the Delta, will have to maintain the conditions that are inherent in this area, including a condition with respect to fresh water being available where it has historically been available. I think if there is a deliberate release above what may have been the historic situation for the purpose of repelling salt water farther out into the bay or something of that sort or down the straits farther, that someone is going to have to pay for that water. Now, it seems to me logical that that water ought to be paid for by the people that benefit, if indeed that situation is required or does exist.

Now, I know that there is a great deal of controversy about what the facts are in the case and exactly what kind of quality existed at what point and under what circumstances, and very likely it is going to be very difficult to reach an agreement,

but it seems to me in principle the problem is no different than that for irrigation or any other water use. If it is necessary to dedicate a conserved water resource for the purpose, it seems to me, and it gives a local benefit, the local interests ought to come in and help bear their share of the cost on it.

Now, I think that is my answer to the question.

CHAIRMAN TEALE: The individual benefiting from the water pollution control should be the one to do the reimbursing?

MR. WARNE: Yes, provided it is in fact a benefit that he is getting.

CHAIRMAN TEALE: Would it then follow that if a local agency were to be required to release water for water pollution control that the reimbursement for that portion of their function would then come from the beneficiary downstream?

MR. WARNE: Well, I know that the 1961 Act, which hasn't been thoroughly tested or identified yet by the Federal Government, may have an influence on the opinion as it is eventually developed in this area, but it would seem to me that the problem of paying the costs for a benefit required is the same whether it is for maintenance of quality or quantity.

CHAIRMAN TEALE: The only problem is to collect.

MR. WARNE: That is a big problem, too.

CHAIRMAN TEALE: Any further questions from the committee? I want to thank you again and particularly for being patient and waiting until the end for your presentation.

MR. WARNE: I appreciate the opportunity to hear all

these presentations.

CHAIRMAN TEALE: I want to thank the members of the committee and the members of the audience for their interest. I feel as I did this morning this is a very important field of investigation that we are going to have to follow up, and in our future investigations we will probably be asking for information from the water users themselves rather than from the furnisher of the water. I now want to repeat our next meeting will be in San Diego on the 18th and 19th of October.

SENATOR CHRISTENSEN: Mr. Chairman, is a transcript of the testimony going to be available?

CHAIRMAN TEALE: Yes.

SENATOR CHRISTENSEN: I wonder if we could ask the chairman to see that the witnesses who have testified here today, together with the members of the committee, receive a copy?

CHAIRMAN TEALE: Yes. The meeting is adjourned.

(Thereupon the meeting was adjourned.)

REPORTER'S CERTIFICATE

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This is to certify that I, Alice Book, a Certified Shorthand Reporter, was present at the time and place the foregoing proceedings were held before the Senate Fact Finding Committee on Water, California Legislature, in Sonora, California, on September 14, 1962, and that as such reporter I took down these proceedings in stenotype notes and thereafter caused the notes to be transcribed into typewriting and the foregoing pages, beginning at the top of page 1 to and including 143 hereof, constitute a true, complete, accurate and correct transcription of the aforementioned stenotype notes.

Dated this 1st day of October, 1962.

Alice Book